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Culture, Tourism and the Centre for Education Statistics

Registered Apprentices: The Class of 1992, a Decade Later

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Registered Apprentices: The Class of 1992, a Decade Later

Sandrine Prasil
Statistics Canada

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Executive summary

Potential shortages in specific trades and specific areas of the country are forecast for the coming years in Canada. To help build a high-skills economy, Human Resource and Skills Development Canada (HRSDC) has engaged with Canadian jurisdictions to study the current apprenticeship situation in its various dimensions.

One particular aspect being examined is the perceived low completion rates of Registered Apprentices (RA). This pilot study follows a longitudinal cohort of registered apprentices, who first started their programs in 1992, over a period of 11 years. The report discusses the quality of, and gaps in, current administrative data available to measure completion rates. Finally, it presents methodological work to highlight pros and cons of different approaches to calculating a completion rate.

Using the Registered Apprenticeship Information System (RAIS), this pilot study covers the three jurisdictions that could provide data at the individual level over the 11 year period: New Brunswick, Ontario and Alberta.

This report provides a brief overview of various aspects of apprenticeship in Canada. A framework is used to analyze results from the 1992 longitudinal cohort. The report ends with a discussion on future research possibilities and quality improvements that could be made to RAIS data.

Main results for the three studied jurisdictions show that over 11 years, from first registration in 1992 about half of apprentices completed the trade they had started, almost half dropped out and depending on the jurisdiction, 5% to 12% were still continuing after 11 years.[1] There were fewer completers amongst older apprentices. Most completions occurred 4 to 6 years after registration.

Registered Apprenticeship Information System (RAIS)

The analysis has been done using RAIS annual data collected since the early 1990's. This database collects information on registration, enrolment and certification by given trade. Information was linked from 1992 to 2002 at the individual level, by jurisdiction. Interprovincial mobility could not be measured, since identifiers are changed when an apprentice changes jurisdiction. It is possible that apprentices moving from one province and registering and/or completing in another province are included in 'dropouts' in their original province.

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Introduction

Potential shortages in specific trades and areas of the country are forecast for the coming years in Canada.[2] To help build a high skills economy, Human Resource and Skills Development Canada (HRSDC) has set as a goal the strengthening of apprenticeship programs across the country. Apprenticeship training programs provide an important source of skilled workers to the Canadian economy. These programs are structured around a mix of in-class and on-the-job training. Upon success and completion in both components, a provincial certificate is awarded. These programs are structured to respond to both the needs of the economy and the constraints faced by potential participants. About 275 trades exist across jurisdictions with apprenticeship programs (see list in Appendix 1).

In the current context, there is an emerging need to evaluate the accuracy of existing measures of program success and evolution. There is also a need to evaluate the quality of existing data about registered apprentices and to identify any data gaps.

Completion rates are one estimate commonly used to indicate the success participants have in receiving an Apprenticeship certificate. They also reflect on the intrinsic structural health of available programs. Currently, more than one approach exists for measuring national and provincial completion rates. Since jurisdictional administrative data were first collected, in the early 90s', the annual number of apprentices who become certified has varied from 16,000 and 19,000. The number of enrolled apprentices enrolled annually is about ten times larger varying between 165,000 to 215,000. On the surface, it appears that once apprentices have begun their program, constraints such as job availability, family responsibility, economic conditions, etc., may influence their training commitment and extend the duration of their apprenticeship. There is a need to go beyond the surface to understand what is behind these numbers.

This report looks more closely at completion issues using a longitudinal cohort created from the Registered Apprenticeship Information System (RAIS). This work will be repeated for the coming years, with one new cohort added each year. Year after year, the analysis will get richer as more cohorts become available for comparison and thus increasing the understanding of completion of apprenticeship programs.

1. Apprenticeship in Canada, setting the context

There is growing concern about potential shortages in various trades across Canada. While perspectives vary on the severity of the issue by trade and by jurisdiction, there is agreement that apprenticeship programs need special attention to ensure that there will be enough certified skilled workers for the coming years[3]. Recruitment and retention of new apprentices during this current decade will directly affect the future supply level of skilled workers. Many factors may contribute to the supply of journeypersons[4] including the number of apprentices receiving their certificate, apprenticeship program's regulation, the administration of trades programs and certification, labour market conditions, an aging population, etc. To set the context for understanding apprenticeship in Canada, what follows is an overview discussion of some of these factors.

Administration at the jurisdiction level

Provincial legislation and regulations govern the certification of apprentices and trade qualifiers across the country. Trades may have either a compulsory or voluntary apprenticeship certification, or have no apprenticeship training requirement (it may be instead training provided at a college level, for example). In order to work in a trade requiring compulsory certification, one needs to be a registered apprentice, have a certificate of qualification, or have an exemption.

Jurisdictions are responsible for the development and administration of apprenticeship programs. The importance of the on-the-job training component combined with the long history and tradition of programs contribute to an individuality that challenges any meaningful analysis done at a national level. As a result, the duration, the administration of programs, the type of certification and the role played by industries in training vary by trade and jurisdiction.

All apprenticeship programs include both in-class (technical) and on-the-job training and most apprenticeship programs provide a certificate. However, apprenticeship programs are different in many ways depending on the trade they cover and the jurisdiction where they are located. Some jurisdictions also provide pre-apprenticeship training for specific trades to help future apprentices prepare for and decide on their participation in an apprenticeship program.

Jurisdictions studied

Three jurisdictions are part of this study: Ontario, New Brunswick and Alberta. Only jurisdictions with individual level of data over the 11-year period have been kept. Manitoba, Saskatchewan and Nova Scotia were not included because they did not have individual data in 1992. British Columbia was not included because the identifier structure for apprentices changed during the 11-year period and no concordance was available to link the data over the complete period. Newfoundland also had an interruption in their identifier structure although a concordance was available. For a number of years only aggregate information was provided. In Quebec, the universe of apprentices was not defined in the same way as the other provinces. The Quebec universe definition is being reconciled and will be available for inclusion in subsequent studies.

Red Seal Trades

About 275 trades exist across jurisdictions. Among all trades, there are forty five Red Seal trades (see list in Appendix 1).

These trades have established standards across jurisdictions to meet the needs of the industry. Thus, a Red Seal endorsement allows a journeyperson to move from one jurisdiction to the other without supplementary training or examination. Apprentices that move from one jurisdiction to another before completion, are assessed to determine what technical training (college) is still required for certification. A Red Seal trade requires compulsory examination to work in other jurisdictions. However, it may not require compulsory certification within a jurisdiction.

There are various ways of administering the Red Seal Endorsement. Most jurisdictions have only one interprovincial exam which allows candidates to become trade qualified in the jurisdiction and across the country. A higher mark on the exam was required to obtain a Red Seal Endorsement. Recently, this distinction has been removed. Some jurisdictions still have two different exams, one for the apprenticeship program and one for the Red Seal Endorsement. In these jurisdictions, passing of the interprovincial exam is not required for certification. Quebec does not have Red Seal Endorsement.

Labour market conditions

During good economic conditions, more trade-qualified persons and apprentices will be employed. Higher demand for trade workers will normally result in more people entering apprenticeship programs. For example, more than 50,000 people enrolled as apprentices in building construction trades in 2002, when Canada was enjoying a building boom, especially in residential construction[5]. Although the added demand may lure people into training programs, it is during these periods that industries are likely to claim higher shortages of tradespersons and apprentices due in part to the lag between initial enrolment and graduation. However, the same employers may find it difficult to support apprentices if economic growth slows down.

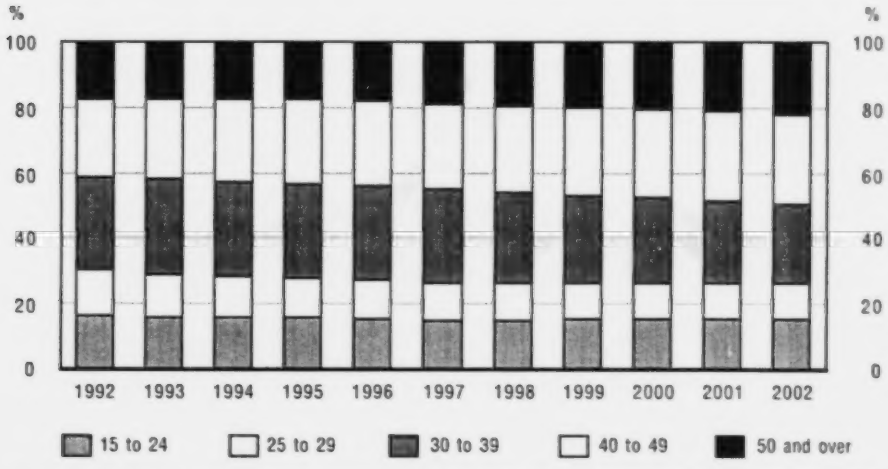
The period under study, 1992 to 2002, was marked by a major recession followed in the second half of the decade by strong improvements in economic conditions.[6]

Aging Workforce

Besides the overall labour market conditions, another factor that can affect the supply of apprentices in the labour market is a combination of an aging trade population with a slow entry of younger certified tradespersons. The aging of the trade population is a reflection of the age distribution of the Canadian population. More baby-boomers are approaching retirement age and this puts pressure on the supply of tradespersons. Figure 1 illustrates the aging of the employed population over the 11 years studied. The proportion of employed people aged 40 and over increased from 41% to 49%.

Figure 1

Employed tradespersons, 1992 to 2002



Source: *Labour Force Survey.*

Looking more closely at the age distribution by trade, three groups of trades stand out, given the relative proportion of age groups.[7]

The construction industry trades were among the oldest. Looking at the Labour Force Survey data, close to 60% of employed construction millwrights and industrial mechanics, crane operators and industrial electricians were aged 40 years and over in 1992, approaching 70% by 2002.

The transportation industry might be described as "middle-aged". In 2002, about 40% of motor vehicle repairers and mechanics were aged 40 and over.

Finally, the third group is characterized by a larger proportion of young people even if the same aging trend is also occurring. About 50% of cooks were aged between 15 and 29. Still, the proportion of those 40 and over had increased from 29% to 36% over the 11 years. Hairstylists were also relatively young but they too were aging as the proportion of 40 and over increased from 30 to 41%.

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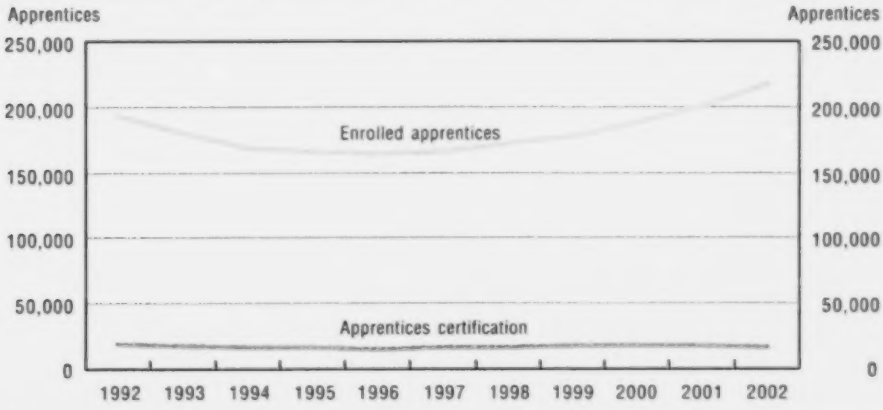
Certified apprentices

Figure 2 shows the numbers of people who completed apprenticeship programs and the number of enrolled apprentices[8] annually from 1992 to 2002. Enrolment shows an increase since the mid 1990's, likely a reflection of the economy recovering from the early 1990's recession, while certification figures have remained relatively stable. In 2002, a total of 234,460 people were registered in some form of training program, up 7.8% from 2001 and a 40.8% increase from 1996. It was the seventh consecutive annual increase. Most enrolment figures include anyone who started a program at any point in time and did not drop out. However, there is always a lag between registration and certification. Even if certification numbers have not yet increased as a follow-up of previous years larger cohorts, it may be reflected during the next few years.

Figure 2

Distribution of apprentices by enrolment and certification, 1992 to 2002



Source: *Registered Apprenticeship Information System.*

Pathways to completion and certification[9]

The decision to register in, and complete an apprenticeship program is influenced by various factors and it is difficult to measu ? in a systematic way their direct impact. For example, with a stronger labour market, more apprentices may start a program, hoping that the economic conditions will be similar once they complete. Those already registered may decide either to abort their program for more immediate opportunities or to complete their program faster knowing that they have a job with their current employer. With a slower economy, apprentices may have a harder time finding an employer to provide training and be less encouraged to register, to keep their training job or to find a job if they certify.

When considering all these factors, in addition to completion followed by certification, apprentices have a few pathways available to become tradespersons:

- Completion without certification

  Once an apprentice completes on-the-job and in-class training, s/he may wait for a few years before taking the provincial certification exam. An apprentice staying as an apprentice after satisfying official requirements for completion still continues to learn the trade and to earn a salary. In some jurisdictions, there is no penalty for not passing the qualifying exam within a certain time frame.

- Certification without completion

  One does not necessarily have to be a registered apprentice or complete an apprenticeship program to become "trade qualified", as long as years of experience and other qualifications can support the individual in succeeding at the certification exam (including Red Seal Exam). However, it might not be that easy to abandon an apprenticeship program and find a job in a corresponding trade.

- Certification even if not required

  An apprentice studying in trades with no compulsory examination required by the Act may still get a certificate to facilitate hiring and increase salary.

This section has outlined elements related to the functioning of apprenticeship programs, and some socio-economic factors influencing apprentice's access and persistence. Building on this context, the following section will present a conceptual framework outlining steps apprentices follow during their learning from the point at which they register to their completion and certification.

2. Conceptual framework: Completion and certification

The presentation of a framework at this point becomes useful to the development of relevant research questions related to apprenticeship completion. Among these questions are: what are the factors affecting completion and certification? What are the possible outcomes related to the success of apprentices such as the completion and certification? Are they working in the industry related to their training program?

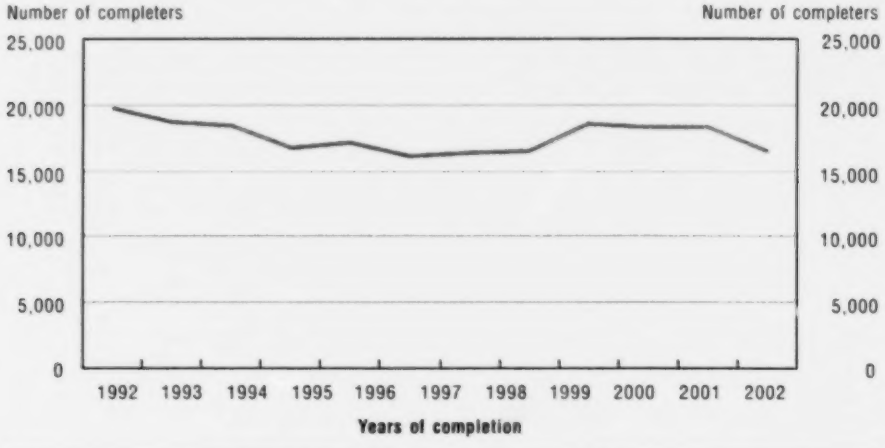
The following framework outlines four main elements to consider when measuring completion and certification for a cohort: i) the role of key stakeholders, ii) the impact of duration of training, iii) the definition of outcome: completion and/or certification, iv) the cohort approach.

1. Key stakeholders

Training institutions, jurisdictions and industries all have a role to play in offering the labour market an added value supply (see Conceptual Framework Figure; Key Stakeholders are in bold in square boxes). Training institutions and industries prepare the apprentice for the labour market through in-class and on-the-job training. Most jurisdictions are the entrance and exit doors for the administration of registration and certification. The economic context of each jurisdiction also affects the choice of trades available to apprentices. Jurisdictional analysis is thus essential to understanding completion rates.

National and jurisdictional completion estimates can tell different stories. As seen earlier, each jurisdiction has its own way of developing and administering apprenticeship programs. Furthermore, apprenticeship programs are connected to the economic cycles at the trade and jurisdiction levels. Programs adjust their intake of new apprentices to the demands of the labour market and can also adapt their program to better answer the needs of the industry. National figures on completion may thus be uninformative since larger jurisdictions may hide the information of smaller ones. The following figures show the distribution of completers over the last decade at the national and jurisdictional levels and illustrate the importance of jurisdictional analysis (see Figures 3 and 4).

Figure 3
National distribution of completers



Source: *Registered Apprenticeship Information System.*

The national figure indicates that the number of completers has not strongly fluctuated over the past decade. There was an increase in 1999 and a decrease in 2002, the latter being mostly seen in Ontario, likely related to higher passing marks and labour disruption that have delayed the certification process. That other jurisdictions have seen increases in the number of completers in recent years is not apparent when only examining national estimates.

2. Duration of training

Another aspect of success, outlined in this framework is the duration for completion and certification. If an apprentice takes longer than the expected period to certify is it considered a success from the program's point of view? Is there a time threshold by which the cost of training an apprentice is higher than the benefit of obtaining a certificate? Thus a certification (or completion) rate could focus specifically on people who certified within the expected time. For the purpose of this report, however, all completions or certifications will be considered regardless of the time taken.

Pathways chosen by apprentices directly influence the measures of completion and certification. A longer duration may increase opportunities for apprentices to change their mind about completing their training. The longer it takes to train, the more likely the labour market can change and affect the decision to stay or not in a trade. Furthermore, apprentices need to complete a certain number of on-the-job training hours and thus employment availability will directly affect their capacity to meet this requirement. Finally, the duration directly affects the calculation of completion rates when a longer period taken to complete, spreads a population over more years thus reducing the number of apprentices who complete every year.

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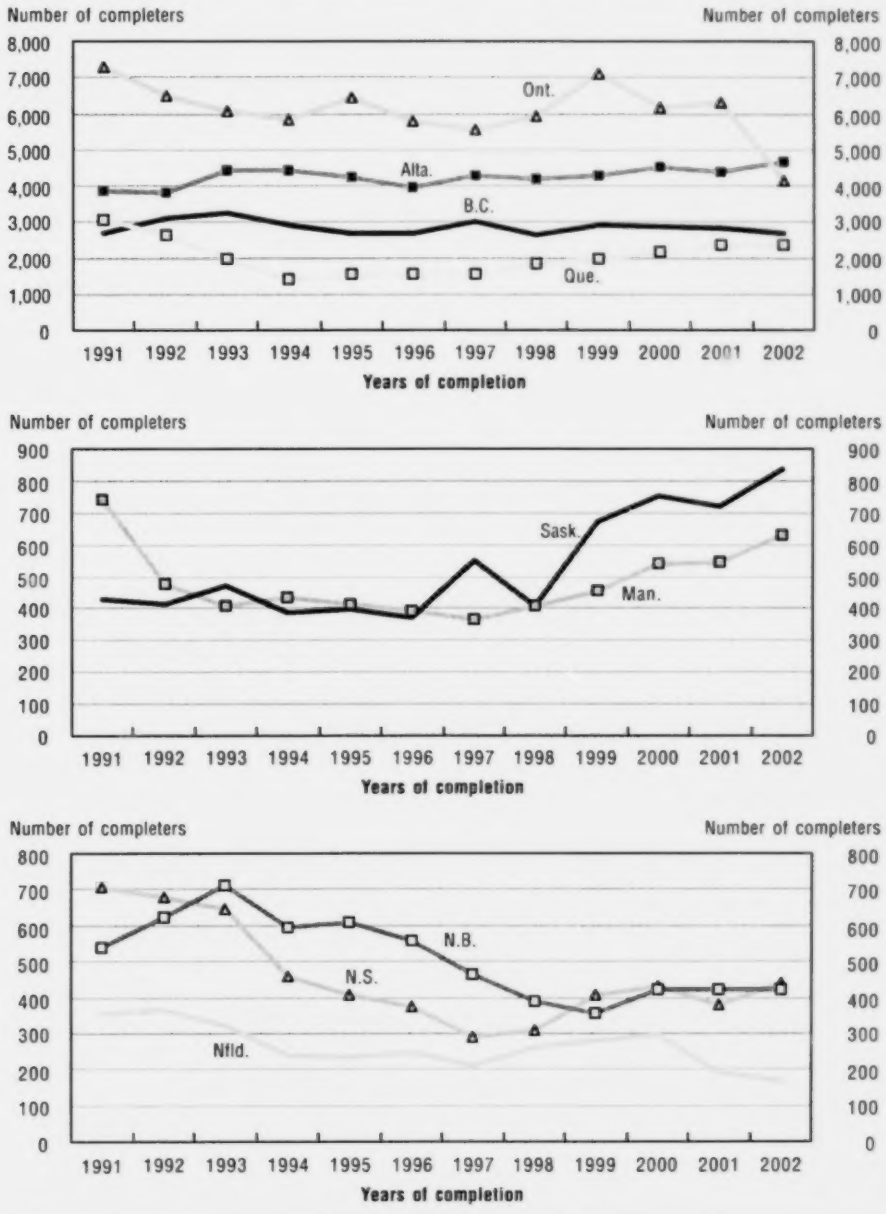
Figure 4

Provincial distributions of completers



Source: *Registered Apprenticeship Information System.*

3. Definition of outcomes: completion and/or certification

From the program administrator's point of view, certification (successful exam for trade qualification) is a measure of success. The outcome is certification, not just completion. Results show, however, that some apprentices continue their training even after they have met requirements (number of hours completed). This implies that the pool of completers can be larger than the pool of certified apprentices (see Methodology Box). Consequently, a measure of certification may be lower than a measure of completion. It may be relevant to have both measures by trade and by jurisdiction. Thus variables related to completion of in-class, completion on-the-job, completion of both, and certification may all be relevant.

4. Cohort approach to measuring completion rates

A cohort is composed of individuals grouped together by a common aspect. In this study, a cohort refers to an apprenticeship program in the same year i.e. in 1992. The completion rate based on a cohort approach used in this study, measures the number of apprentices who started in 1992 and completed over the period 1992 to 2002 and compare them to those who started in 1992. Cohort indicators based on a group who enter all in the same time period can facilitate trend interpretation by giving a clear picture for every cohort in any year. Annual completion rates have often been calculated by relating enrolment counts to completion counts at an aggregate level. Enrolment counts generally encompass individuals who started at different points in time or from different cohorts.

Completion versus certification

Current data on completion gathered through the Registered Apprenticeship Information System (RAIS), i.e. satisfying requirements of in-class and on-the-job training, corresponds closely to certification data, for three main reasons: 1) RAIS's guidelines to the jurisdictions assume that certification should occur immediately after completion of a program; 2) some jurisdictions use certification as a trigger to acknowledge completion; 3) RAIS does not collect the number of hours done on-the-job every year. It is assumed by default that if an apprentice is in the base for one year, s/he has fulfilled the number of hours required for the trade during that year. This expected number of hours may be smaller than the usual number hours, given the economical cycle in a jurisdiction.

The main difference between completion and certification figures is explained by the fact that RAIS collects information on people who originally registered as apprentices, who then left and later received a certificate as a tradesperson. Most of these people do not have a completion status as an apprentice. Appendix 2 presents completion and certification data.

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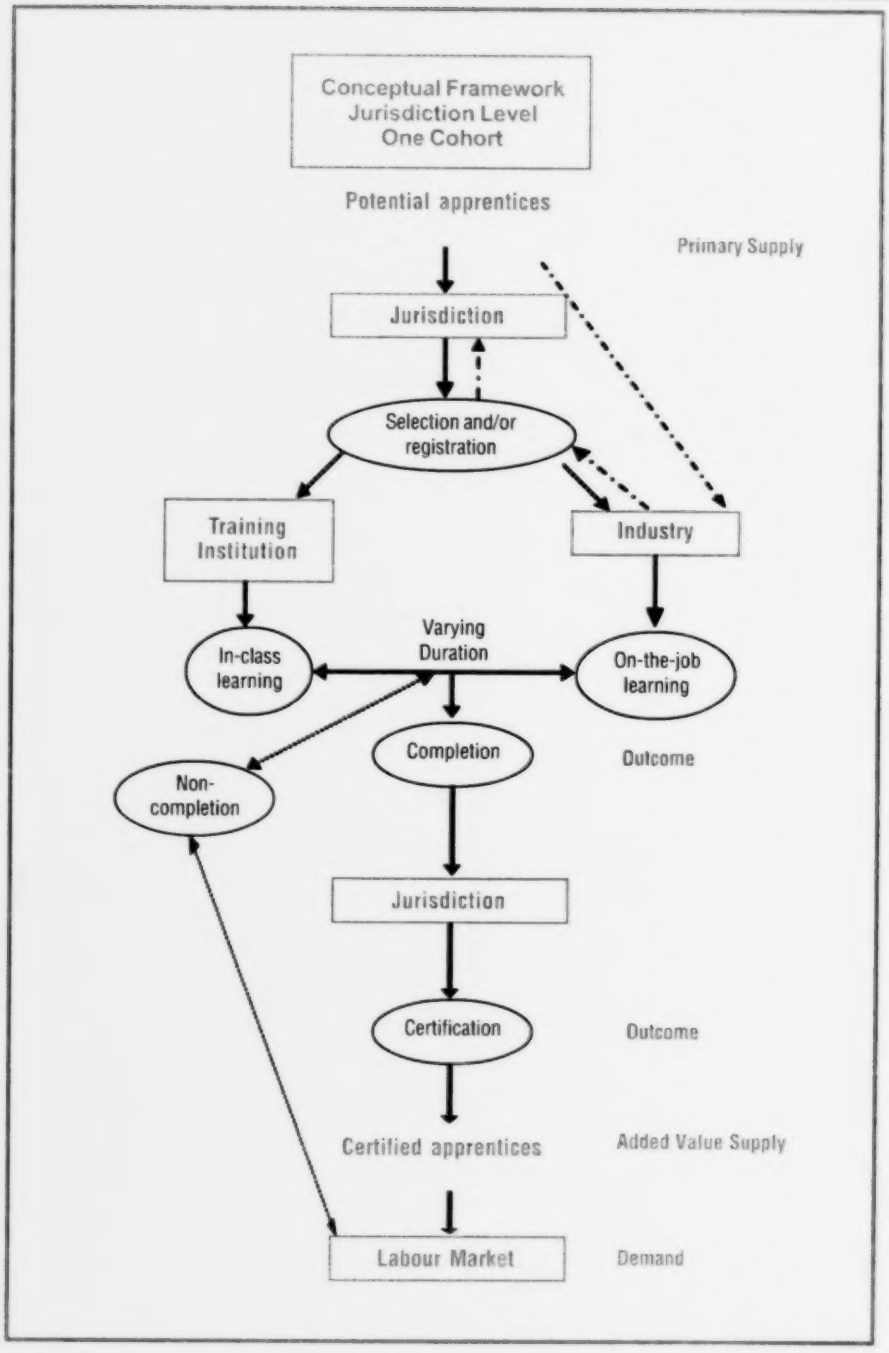

Conceptual Framework
Jurisdiction Level
One Cohort
Potential apprentices
Primary Supply
Jurisdiction
Selection and/or registration
Training Institution
Industry
Varying Duration
In-class learning
On-the-job learning
Completion
Outcome
Non-completion
Jurisdiction
Certification
Outcome
Certified apprentices
Added Value Supply
Labour Market
Demand

The number of apprentices enrolled annually will influence the *total* number of all enrolled individuals in any given year and thus the number of potential annual completions. The interpretation of the effect on completion rates of combined cohorts into one enrolment figure is made even more complex by varying socio-economic characteristics of each cohort. Aggregate annual figures of completion become an implicit average of cohorts that provides completers.

A few indicators are possible, a simple one being the Annual Cohort Completion Indicator (ACCI). This indicator is better used when following a cohort within one jurisdiction. The completers[10] are apprentices who registered in the same year; they are compared with the total population who registered at the same time as they did. Completers can take the recommended number of years 'x' to completed, shorter or longer periods of time.

$$\text{ACCI}_{t} = \frac{\textit{Completers IN a year}_{t}\ \textit{from Cohort}_{t-x}}{\textit{registered}_{t-x}}$$

x = duration to complete

t = current year

For example, suppose we have 1,000 apprentices who registered for the first time in a program in 2001 with no completers in 2001, 5 in 2002, 50 in 2003 and 100 in 2004. Completion rates would be 0.5%, 5%, and 10% for 2002, 2003 and 2004 respectively. This indicator can also be cumulative over time by including all apprentices who started in a specific year and completed *by* the current year. This Cumulative Cohort Completion Indicator (CCCI) will be the indicator used in this report.

$$\text{CCCI}_{t} = \frac{\textit{Cumulative Completers BY year}_{t}\ \textit{from Cohort}_{t-x}}{\textit{registered}_{t-x}}$$

x = duration to complete

t = current year

Using the same example, we would have 155 completers over 1,000 registered. This cohort would then have a completion rate of 15.5% after four years.

Completion Indicators

More than one indicator may be used to measure certification or completion because each type of indicator provides specific information. Appendix 3 presents various indicators and discusses their strengths and weaknesses. The choice of indicators is first driven by the information to be measured and its strengths and limitations. The availability and quality of indicators are dependant on the data used to compute them. Indicators are one tool amongst others to make any recommendations on apprenticeship programs.

These two indicators have the advantage of being relatively easy to use. Each cohort is kept separate which allows for comparison between cohorts and to understand the particular effect of an economic cycle on an individual cohort. It is better used for programs of similar length. The comparison between cohorts must be done carefully since various socio-economic factors can influence cohorts differently over time. As well, the size of a cohort may affect the completion rate and should be considered when comparing cohorts.

This ratio could provide a 100% completion rate assuming no dropouts or transfers. RAIS data indirectly takes into account transfers from elsewhere since apprentices are likely to complete their program earlier. However, no specific variable indicates the value of the transfer. A cohort should include all transfers and experience credited should also be taken into account.

3. Provincial Analysis

This report follows over an eleven year period a cohort of Registered Apprentices who started in 1992 in three jurisdictions, New Brunswick, Ontario and Alberta. Data comes from the Registered Apprenticeship Information System (RAIS) (see Methodology Box). Main trades in each jurisdiction have been considered (see Appendix 1). The report examines learning paths by looking at the distribution of completers, dropouts and apprentices who are still continuing as of 2002. As well, it distinguishes between completion and interruption since interrupting may not always be an indication of non-completion.

The current cohort started in 1992 during a recession. Apprentices may have chosen various options, given economic circumstances. They may have left before completion if they felt that no job would be available in the near future once they certify. On the other hand, having found a placement as an apprentice, they may have decided to continue as an apprentice for a longer period of time, until they would find better job opportunities.

Definitions and Data limitations

Unit of measure: a person learning or status of learning

Most tables present a Registered Apprentice as having a particular status at a point in time: a completer, a dropout or a continuer. However, a completer may complete more than once; a 'dropout' (also called 'discontinuer' or 'leaver') may be a 'stopout' (coming back) or a 'stayout' (not coming back). It is understood that a stayout may choose to pursue more advanced educational opportunities or work in another skilled occupation. A dropout may go through one or more 'interruptions'; an interruption may be temporary or final. A 'non-completer' can be either a dropout or a continuer.

Tables 2 to 5 in Appendix 2 give a distribution of completers, dropouts, continuers and apprentices who certified. If an apprentice has *different* statuses (ex: a completer and a dropout), s/he will appear in each corresponding table. Consequently there is double counting between Tables 2, 3, 4 and 5. If an apprentice has more than one instance of the *same* status (ex: two completions), s/he will be counted only once to avoid double counting of people within each table. Table 6, on the other hand, takes into account the number of statuses for each apprentice and gives a total number of completions, discontinuations, continuations and certifications, regardless of the number of apprentices. Total learning statuses are higher than total registered apprentices.

Definitions and Data limitations

Longitudinal coherence

The Registered Apprenticeship Information System was not originally designed for longitudinal analysis. It originated as a database used to monitor registration and completion of apprentices. The databases are different for each jurisdiction. A common template is used to extract information from these databases and to send them to Statistics Canada. Thus some modifications were required to prepare RAIS to follow apprentices longitudinally. Only variables that were reported reliably across jurisdictions have been kept for analysis.

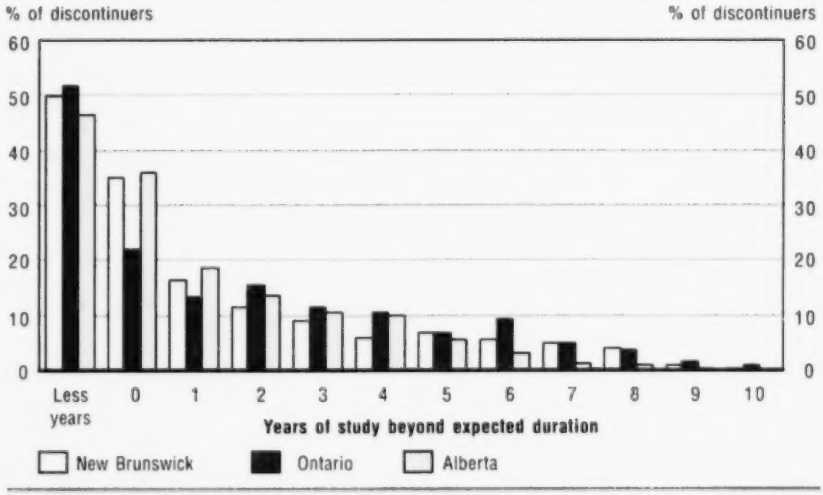
A minimalist approach has been taken to processing the longitudinal file. Some adjustments have been made to improve the coherence of the longitudinal status in the following situations: wrong trade codes, not a real beginner in 1992, continuers or transfers missing in following year(s), continuers in different trades, repeated completion and dropping-out in the same trade (consecutive years or skipped years), wrong duration of a program, new beginners in a different trade with no new registration (consecutive years or skipped years), certification in two different trades in consecutive years, completers continuing in the same trade (consecutive years or skipped years), completer dropping out in the same trade (consecutive years or skipped years). Some isolated cases were lost because of the modification of their identifier.

Some jurisdictions do not track apprentices as they are doing their on-the-job training. Only the in-class training is registered. By default, with no news, it is generally assumed that the apprentice is a continuer for the following year. Other jurisdictions, however, collect this information. Since it is not available for all jurisdictions, RAIS does not collect this information.

Ascertaining the discontinuation status of apprentices is complicated by the fact that it can sometimes take 2 to 3 years before the database receives a confirmation of an apprentice discontinuation.[11] Several dropouts appear to have left after a number of years sometimes greater than the duration required to complete a trade. However, the largest proportion left within a number of years smaller than the expected duration of the program (categories 'less years' and '0').

Figure 5

Percentage distribution of discontinuers by years of study beyond expected duration of program, 1992 to 2002



Source: *Registered Apprenticeship Information System.*

Definitions and Data limitations

Duration of apprenticeship training

The variable *expected duration* is challenging to report in a comparable way across jurisdictions. Each on-the-job training component takes a varying number of hours by jurisdiction and may be taken within a varying time frame. A year may be considered as an 8, 9 or 12 month-period. As well, within each trade, there are various levels of competencies. A level is mostly defined based on a ranking of level of expertise. Sometimes, as well, training can have various durations to adjust to the level of acquired competencies of apprentices at the entry level. Thus, the same trade in one jurisdiction may have varying expected durations.

However, one trade in one jurisdiction generally had the same duration reported. Some trades, however, had wider variation in duration. For these particular cases, any analysis done using duration was based on the information reported in 1992, at the beginning of the program.

Studied trades

Trades examined by jurisdiction included those with the largest number of apprentices registered in 1992. Consequently the list of trades varies by jurisdiction and may limit comparison (see Appendix 1 for a full list of trades).

Highlights of overall findings for Ontario, New Brunswick and Alberta

The period between the mid '90s and 2002 was one of strong economic growth in Canada. New Brunswick GDP increased by 49%, in Ontario it rose by 58%, and in Alberta there was a jump of 105%. The manufacturing industry contributed in a large part to this increase in Ontario and New Brunswick, while it was the case for the mining, oil and gas extraction industry in Alberta.[12] Many completions occurred in the typical time frame of a program, 4 to 6 years after registration, which would coincide more or less with the years (1996 to 1998) when economic expansion began in earnest. However, with current data no direct relationship can be measured between completion and the economic cycle.

Newly registered apprentices in 1992 were mostly males

In 1992 registered apprentices (RA) were mostly male (9 out of 10). Alberta had slightly more females because of the contribution of the hairdresser trade. In this jurisdiction about 68% of food and services trades' apprentices were female. For the three jurisdictions, this category of trades had the largest number of females, followed by a smaller grouping of 'Other Trades', which includes trades such as landscape gardener or book binder (see Table 1).

About half of registered apprentices who started in 1992 completed their 1992 trade by 2002

Depending on the jurisdiction, about 47% to 59% of apprentices completed a trade within the 11 year period studied and 80% to 88% of them did so following a simple path with no change of trade and no interruption (see Tables 2 and 2.1). Interestingly, most completers did not interrupt their training. This is true for most trades regardless of their completion rate. It gives some indication of the importance of not 'taking a break' to the completion of programs.

Most dropouts[13] never return

About 50% of RA's had stopped their training at some point during the 11-year period. Depending on the jurisdiction, 76% to 88% of these apprentices never returned to their 1992 trade training. Some "stopouts", from 6 to 13%, returned to complete a trade, depending on the jurisdiction (see Tables 3 and 3.1).[14]

Still continuing after 11 years

Depending on the jurisdiction 5% to 12% were still continuing after 11 years; within the 5 first years, the percentage of continuers of the 1992 cohort of new apprentices dropped sharply (see Tables 4 and 6).

Most certifications occurred 4 to 6 years after registration

Although certifications occurred throughout the 11-year duration of the study, there was a higher proportion of certifications in the period of 4 to 6 years after registration (in 1992). Seventy two to 87% of certified apprentices had received their card within 6 years following registration (see Table 5.1).

Fewer completers amongst older apprentices

People of all ages take apprenticeship training. In all studied jurisdictions, the 20 to 24 year olds represented the largest age group but at least half of the 1992 RA's were 25 or older. A higher proportion of younger apprentices completed their trade. There was no clear relationship between age and the time taken to complete (see Tables 1.1 and 2).

Similar trends across jurisdictions for specific trades

For most trades there was no consistent completion pattern across the jurisdictions studied. However, carpenters and cooks seemed to have consistently lower than average completion rates. In fact, within building and construction trades there were several trades with lower completion rates than found in other trade categories (see Table 2).

Breaking some myths

There was no apparent relationship between the duration of a program and completion or dropout rates. Longer programs did not have higher dropout rates (see Tables 2.2 and 3.2). There was also no trade from which apprentices were consistently dropping out faster (see Table 3.1).

New Brunswick

As many completions as discontinuations[15]

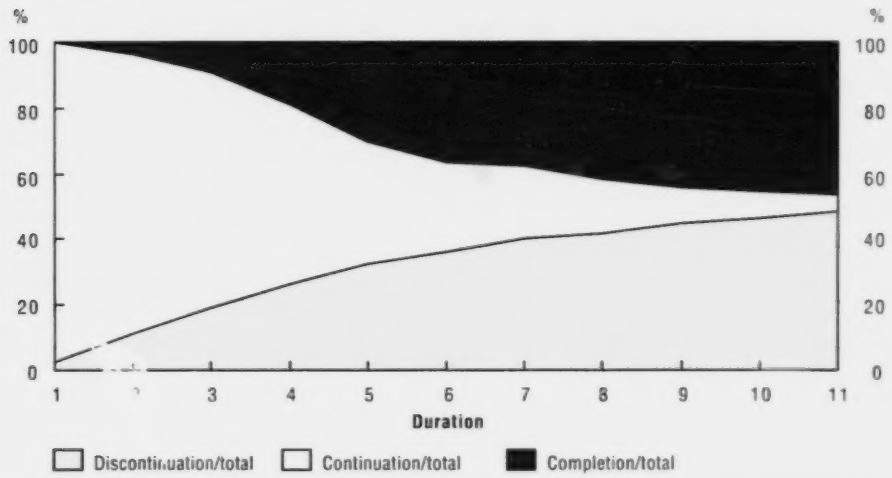
About 900 people started new apprenticeship training in 1992 in New Brunswick, with four out of ten aged 20 to 24, representing the largest age group for the jurisdiction. New Brunswick had fewer trades than the other jurisdictions in this analysis, likely a reflection of demand and available resources. The most common trades with Registered Apprentices (RA) were carpenter, construction electrician, automotive service technician, cook and plumber/gasfitter (see Tables 1 and 1.1).

The following figure illustrates the share of three learning statuses[16] (completion, discontinuation and continuation) over the 11-year period for New Brunswick. The middle portion shows the proportion of continuation narrowing over time to be replaced by a growing proportion of completion and discontinuation.

After 11 years, for each completion there was one discontinuation (see Table 6 and Figure 6).

Figure 6

Status of learning for the 1992 new registered apprentices, New Brunswick, 1992 to 2002



Source: *Registered Apprenticeship Information System.*

One out of two completed during the 11-year period

Half of 1992 RA's had completed a trade after 11 years and about three quarters of completions occurred within 6 years (see Tables 2 and 6).

Most completions occurred within the expected duration.[17] Most expected durations of 1992 programs were 4 years, with some trades reporting 3 or 5 years. About 60% of completers finished within the expected duration of the program or within one extra year. This includes apprentices who took less than the expected period likely because of advanced credits (where either previous in-class training or on-the job training is recognized and credited towards the current trade training) (see Table 2.1).

A high proportion of completers stayed in the same trade. Relative to Alberta and Ontario, New Brunswick had the highest proportion of completers who finished in the same trade as they registered in 1992 (88%). Machinists, industrial mechanics (millwrights), welders and plumbers/gasfitters had higher completion rates. Even if carpenters and cooks had the lower completion rates, they tended to complete without interruption (see Tables 2 and 2.1).

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About 55% of apprentices received their certification[18] 4 to 6 years after they had started (see Table 5.1). A higher proportion of younger apprentices completed their trade as compared with Ontario and Alberta. Interestingly, a higher proportion of older apprentices completed with no interruption (see Table 2.1).

Most apprentices who certified received their certificate in their 1992 trade (94%). The small percentage of apprentices, who certified in a different trade, had started in 1992 in trades such as automotive service technician and motor vehicle and heavy equipment technicians.

Even if 78% of certified apprentices had registered in 1992 in a Red Seal trade, 63% received a Red Seal certificate (Red Seal Trades listed in Appendix 1).

Table A

Distribution of New Brunswick certified apprentices by 1992 registration and by certification

	1992 registration (%)
Red Seal Trades	78
Non Red Seal Trades	22
	Certified 1992 apprentices (%)
Red Seal Certificate granted to an apprentice	63
Non Red Seal Certificate granted to an apprentice	32
Certificate granted to a tradesperson	5

Source: *Registered Apprenticeship Information System.*

Almost 9 out of 10 apprentices who ever dropped out never came back

The dropout rate can be influenced by various factors, such as a lack of fit with program, financial reasons, lack of employment, etc. About half of apprentices who registered in 1992 discontinued at least once during the 11 years. This proportion is comparable to other jurisdictions.

A large proportion of apprentices who left their 1992 trade never returned (88%). This proportion of stayouts[19] was about 10 percentage points higher than for other studied provinces. This highlights the challenge of retaining apprentices (see Table 3.1).

Dropping out at some point in time limited chances to complete. Most apprentices who dropped out at some point never completed a trade (94%).

About 6% of dropouts interrupted their training temporarily and another 6% had multiple interruptions. Among the main trades, carpenters, cooks, truck and transport mechanics had a higher discontinuation rate while plumbers, welders, industrial mechanics (millwright) and machinists had a smaller proportion of dropouts (see Tables 3 and 3.1).

About 38% of apprentices dropped out 2 years or more *after* the expected duration of the program. Dropouts may, however, have had time to learn skills before leaving the training. Most of the trades with higher proportion of dropouts had also a higher proportion of apprentices discontinuing at a later stage in their training (carpenters, welders). For most of the main trades, the median number of years[20] taken for a first drop out corresponded to the normal duration of the program plus or minus one year, with the exception of machinists who had a 6 year completion

median for an expected duration of 4 years (see Tables 3 and 3.1). More analysis will need to be done to see if this could also be caused by delays for the administration of the program to receive an official dropout status from the apprentice.

One quarter of continuers had previously completed a trade during the 11-year period

About 30% of 1992 registered apprentices were still continuing their training after 6 years, and 6% after 11 years. Three quarters of these continuers had no interruption during the course of 11 years. More analysis is needed to explore conditions that may lead to continuing apprenticeship (see Tables 4.1 and 6).

One quarter of continuers had already completed a trade during the previous 11 years; thus their current continuation was in a different trade than their 1992 trade. However, 6 continuers out of 10 were still in the same trade. Plumbers/gasfitters, carpenters and cooks were the trades with a higher continuation rate (see Tables 4, 4.1 and 6).

Ontario

Ontario had the largest number of different trades offered to apprentices who registered in 1992 (see Appendix 1), thanks to a wide industrial diversity[21].

Four completions for every 5 discontinuations[22] during the 11-year period

More than 8,300 people registered in an apprenticeship program in 1992 in Ontario, and nine out of 10 were males. Trades in the Food and Services Industry collected the largest proportion of females (see Table 1). About 37% of apprentices were aged 20 to 24, representing the largest age group.

All main sectors of the economy were well represented by the selection of available trades. Some of the main trades were (in decreasing order) automotive service technician, construction electrician, carpenter, cook, hairdresser/hairstylist, industrial electrician, plumber/gasfitter, industrial mechanic (millwright) (see Table 1.1).

The following figure illustrates the share of three learning statuses [23](completion, discontinuation[24] and continuation) over the 11-year period for Ontario. The middle portion shows the proportion of continuation narrowing over time to be replaced by a growing proportion of completion and discontinuation statuses.

After 11 years, for every four completions there were 5 discontinuations. Completions reached a peak on the fifth year, while discontinuations reached it 7 years after registration (see Table 6 and Figure 7).

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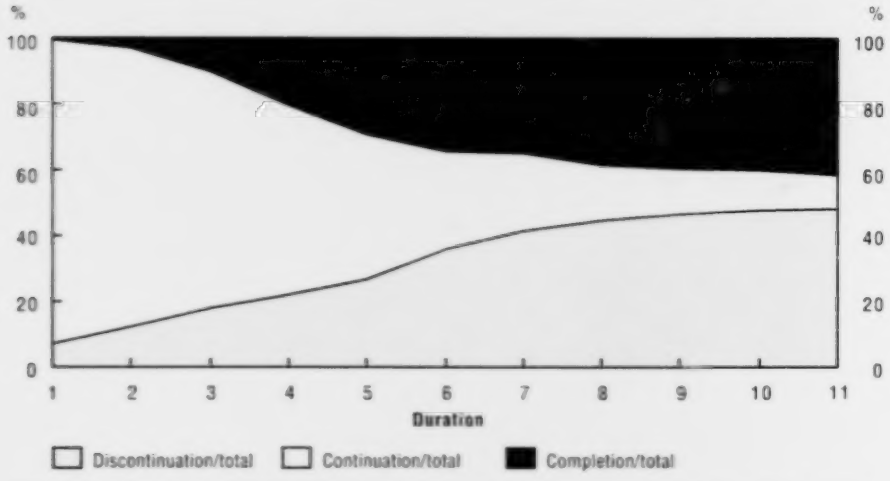
Figure 7

Status of learning for the 1992 new registered apprentices, Ontario, 1992 to 2002



Source: Registered Apprenticeship Information System.

Three out of 4 certified apprentices received their card within 6 years

About 47% of 1992 registered apprentices had completed a trade during the course of 11 years. About 61% of them completed one year of the expected period of their program. Amongst main trades, construction electricians, plumbers/gasfitters, industrial mechanics (millwright) had a higher than average completion rate. About 4 out of 5 completers did not change trade and did not interrupt their training. Relative to Alberta and New Brunswick, Ontario was the only jurisdiction that had rates of completion with no interruption decreasing for apprentices who had registered at an older age (see Tables 2, 2.1 and 5.1).

Trades with higher proportion of 'non-stop' completers were not necessarily trades with high completion rates. Carpenters and cooks had a fairly low completion rate of 35% and 32% respectively, but 88% of carpenters and 90% of cooks who completed did no interrupt their training. Industrial electrician was the trade with the highest proportion of interruptions (see Tables 2 and 2.1).

Three certified RAs out of 4 received their card 6 years after they had registered. About 80% of all certifications were granted over the same period. Some RA had more than one certification[25] which explains why the proportion of certifications is greater than the proportion of RA who certified (see Table 6).

Most apprentices who certified received their certificate in their 1992 trade (95%). The small percentage of apprentices who certified in a different trade, had started in 1992 in trades such as automotive service technicians, motor vehicle and heavy equipment technicians, construction electricians, and machinists.

Even if 85% of certified apprentices had registered in 1992 in a Red Seal trade, 28% received a Red Seal certificate (Red Seal Trades listed in Appendix 1).

Table B

Distribution of Ontario certified apprentices by 1992 registration and by certification

	1992 registration (%)
Red Seal Trades	85
Non Red Seal Trades	15
	Certified 1992 apprentices (%)
Red Seal Certificate granted to an apprentice	28
Non Red Seal Certificate granted to an apprentice	66
Certificate granted to a tradesperson	6

Source: *Registered Apprenticeship Information System.*

Three quarters of apprentices who ever dropped never came back

The dropout rate can be influenced by various factors, such as a lack of fit with a program, financial reasons, lack of employment, etc. Almost 52% of 1992 apprentices discontinued once or more during the 11 years and within this group 76% never returned.

Dropping out reduced the likelihood of completion. About 88% of apprentices ever dropping out did not complete a trade.

Among larger trades, plumbers/gasfitters, industrial mechanics (millwright), construction electricians, building service technicians, sheet metal workers and tool and die makers had lower proportions of apprentices ever dropping out. Industrial electricians, industrial mechanics (millwright), refrigeration and air conditioning mechanics, tool and die maker and construction electricians had higher proportions of stopouts[26] who completed (44%, 26%, 23%, 20% and 19% respectively) (see Tables 3 and 3.1).

The majority of industrial electricians and heavy duty equipment mechanic technicians dropped after only one year median[27]. On the other hand, industrial plant operators, native residential construction workers, drywall installers, and landscapers took longer to drop (10, 7, 6 and 6 year medians for expected program durations of 4, 2, 1 and 1 year respectively) (see Tables 3 and 3.1).

Twelve percent were still continuing after 11 years

More than a third of 1992 registered were still continuing after 6 years, and 12% after 11 years. Three quarters of continuers had no interruption over the 11-year period. About 83% of continuers were still in the same trade, representing the highest proportion among studied provinces. A higher proportion of industrial electricians, motor vehicle body repairers, machinists, roofers, landscape gardeners, motor vehicle steering suspension and brakes mechanics were still continuing (see Tables 4, 4.1 and 6).

During the 11-year period, 8% of continuers had a completion, indicating that these apprentices would have already completed their 1992 trade.

Alberta

Alberta offers unique trades specific to the oil industry. As well, the structure of the programs facilitates movement between specific trades in comparison with other jurisdictions.

Over 11 years, five completions occurred for every 4 discontinuations

More than 4,800 people started a new apprenticeship program in 1992 in Alberta, 86% of them were males. Among the female apprentices, the largest proportion was found in food and trade services, and in 'Other trades'. The hairdresser apprenticeship program had more than 540 apprentices registering in 1992.

About 35% of apprentices were aged 20 to 24, representing the largest age group, followed by the 25 to 29 year olds who represented 22% of this cohort (see Tables 1 and 1.1).

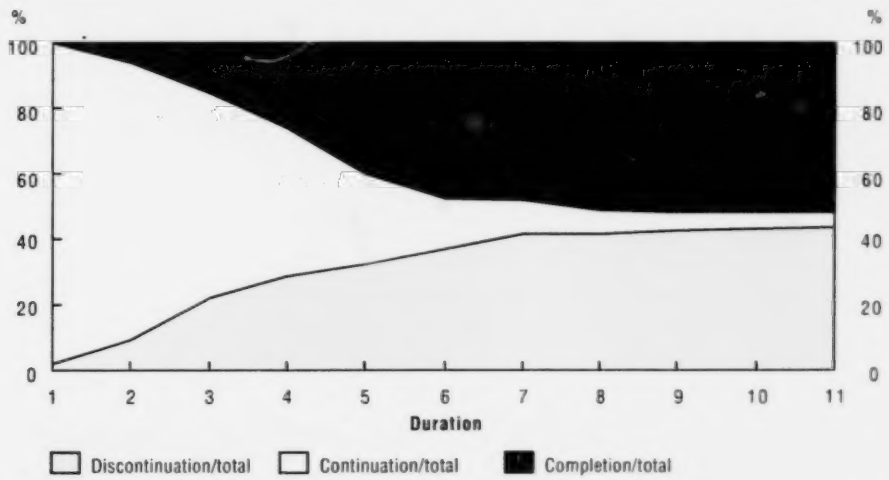
Trades with the most apprentices registering in1992 were (in decreasing order) hairdresser/hairstylist, construction electrician, carpenter, welder, automotive service technician, heavy duty equipment mechanic technician, plumber/gasfitter, cook, industrial instrument mechanic and repair, industrial mechanic (millwright), motor vehicle body repairer, and steamfitter/pipefitter (see Table 1.1).

The following figure illustrates the share of three learning statuses[28] (completion, discontinuation and continuation) over the 11-year period for Alberta. The middle portion shows the proportion of continuation statuses narrowing over time to be replaced by a growing proportion of completion and discontinuation statuses.

Among studied jurisdictions, Alberta had the smallest proportion of continuation after 11 years. With five completions occurring for every 4 discontinuations, Alberta presented the highest proportion of completions among studied jurisdictions. (see Table 6 and Figure 8).

Figure 8

Status of learning for the 1992 new registered apprentices, Alberta, 1992 to 2002



Source: *Registered Apprenticeship Information System.*

Almost six out of ten apprentices completed within 11 years

Relative to other studied jurisdictions, Alberta had a slightly higher proportion of completers with almost six out of ten apprentices completing within 11 years. Alberta, with only 10% of Canada's population, trains more than 20% of the nation's apprentices and remains a net importer of skilled workers[29]. This is likely a reflection of demand. It may also be an indication of Alberta's apprenticeship programs organization.[30]

About 84% of completers finished the trade they had started in 1992 without interruption. Among the largest trades, a higher percentage of hairdressers, cooks, industrial mechanics, welders, and heavy duty equipment technicians completed without interruption (see Table 2.1).

By the 6th year, 85% of certifications[31] had occurred and about half of apprentices had received a certificate (see Tables 5 and 6). Relative to Ontario and New Brunswick, Alberta had a higher proportion of apprentices completing within one year beyond the expected duration of their program (66%) (see Table 2.1).

Most apprentices who certified received their certificate in their 1992 trade (96%). The small percentage of certified apprentices who received a certificate in a different trade had started in 1992 in trades such as automotive service technicians, carpenters and plumbers / gasfitters.

Even if 93% of certified apprentices had registered in 1992 in a Red Seal trade, 70% received a Red Seal certificate (Red Seal Trades listed in Appendix 1).

Table C

Distribution of Alberta certified apprentices by 1992 registration and by certification

	1992 registration (%)
Red Seal Trades	93
Non Red Seal Trades	7
	Certified 1992 apprentices (%)
Red Seal Certificate granted to an apprentice	70
Non Red Seal Certificate granted to an apprentice	29
Certificate granted to a tradesperson	1

Source: *Registered Apprenticeship Information System.*

Even if the completion rate decreased as apprentices were older, as per other studied jurisdictions, Alberta's completion rate with no interruption increased with age. This may likely be the result of a labour market with high demand for trades' skills. However this trend was also observed in New Brunswick whose economy was following a slower growth.

Three quarters of apprentices who ever dropped out never returned

Forty seven percent of 1992 new apprentices discontinued once or more during 11 years. Dropping out reduced the likelihood of completing. About 87% of leavers did not complete a trade. In fact, most apprentices ever dropping out never returned (78%).

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The median years to drop for a *first time* after registering in 1992 was most often equal to the normal duration of the program (see Table 3). In fact, almost seven apprentices out of 10 had discontinued one year or less beyond the expected duration of their training (see Table 3.1).

Hairdressers, welders, heavy duty equipment technicians, and industrial mechanic (millwright) had a lower proportion of leavers.

A higher proportion of 'stopouts'[32] who completed was found in some of the larger trades: plumber/gasfitters, automotive service technicians, construction electricians and welders (23%, 17%, 16%, 15% respectively).

Forty percent of continuers had completed a trade

About 15% of 1992 registered were still continuing after 6 years, and 5% after 11 years. This lower proportion of continuers in comparison with other studied jurisdictions could likely be explained by a higher proportion of apprentices completing faster and more apprentices learning shorter trades (e.g.: hairdressing).

Being a continuer in 2002 did not preclude from having completed a trade at an earlier stage. In 2002, 40% of continuers had completed a trade at some point in time since 1992. Some continuers were also learning a trade different from the one in which they registered in 1992 (64%). However, almost half of continuers had not once interrupted their training since 1992 (45%) (see Tables 4, 4.1 and 6).

A higher proportion of construction electricians, plumbers / gasfitters, motor vehicle body repairers, industrial instrument mechanics and repair, steamfitters / pipefitters were still continuing. About 56% of continuing construction electricians had already completed their 1992 trade.

4. Discussion

1. Potential reasons for non completion

Persistence in postsecondary education has been examined in a recent study[33]. While apprenticeship programs differ from other postsecondary programs, some of the factors that influence persistence in college and university may also be relevant to apprenticeship programs. For postsecondary generally, the main reason given for dropping out of their most recent program by half of Canadian students aged 18 to 24[34], was a lack of fit with either their programs or with postsecondary education in general (not having enough interest, not being sure of what they wanted to do, the program was not what they wanted, they wanted to change program).

Reasons for not completing are also collected by RAIS and a previous survey, the National Apprenticed Trades Survey (NATS) explored this issue directly. A lack of concordance in RAIS between provincial and national categories makes results difficult to interpret (see next section). Reasons specific to apprenticeship programs could be grouped by milestones along the learning path: i) during training, ii) after completion but before certification.

1. During training

- Limited employment opportunities

  Forty one percent of non completers surveyed in NATS reported that they did not have enough jobs and that 49% of them had been laid off or unemployed. To meet their demand in skilled workers, employers have various choices. Ideally, employers try to satisfy short and long term demands. To hire an apprentice today will provide a new tradesperson to the labour market tomorrow. Employers mostly cover on-the-job training costs, even if the apprentice is learning transferable skills that can be used by any other employers. On hypothesis that would need to be confirmed is that during the first year, the apprentice is less productive, paid at a less competitive wage and may be more attracted to a better paid job. Employer's short term priorities may challenge a longer term vision and limit employment opportunities for apprentices.

- Cost of apprenticeship training

  Apprentices face various costs when training: travel, relocation for employment (if living in remote communities), tools, in-class training (with a reduced income since not working), and fees charged for examinations. Added to these possible costs, apprentices can also face delay in EI payments. Furthermore, apprentices are not eligible for student loans (Canadian Apprenticeship Forum (CAF report)). More research would need to be done to assess the cost of apprenticeship training as a whole.

- Family reasons

  Based on the National Apprenticed Trades Survey, the median age of respondents at the time of entry to apprenticeship was 27 years[35]. As adults with family responsibilities and financial commitments, having a job with a regular income is a priority. The main reported reason for not completing was no job availability. If the apprentice can not find a job for training, s/he will be more likely not to complete.

- Not enough journeypersons available for training

  A number of journeypersons is required for the training and supervision of apprentices. This serves as an incentive to encourage employers in training apprentices, who will in turn become journeypersons. However, this incentive has limitations since employers may not have the required number of journeypersons to hire apprentices.

- Barriers at worksites

  The CAF report cited above also outlines factors at worksites that could create barriers for specific target groups and impact on completion.

- Role of unions

  Some unions recruit and support apprentices throughout the training period. There is variation, however, by trade and by jurisdiction. In contrast, apprentices with substantial experience working in the non-unionized sector may have more opportunities to work without being certified (CAF report). This also can occur for non-compulsory trades in the unionized sector, but it is thought to be less common.

2. After completion but before certification

- Literacy level

  One hypothesis is that apprentices may be limited in their literacy level and ability to demonstrate their skills during their training and in a test environment thus impeding on their ability to pass the certification exam. More research needs to be done in this field, using the Adult Literacy and Life Skills Survey.

- May not find a job

  Apprentices may think that a certificate will interrupt their less paid job without giving them a new, more highly paid tradesperson job, based on job availability. This may vary by trade and by jurisdiction, depending on hiring contingencies. Further studies need to be done to examine this hypothesis.

2. RAIS data limitations and future improvements

Data limitations have been described earlier in this report. These lead to recommendations for possible improvements.

Longitudinal coherence

Improving the longitudinal coherence of a database is also a way to improve annual data. Annual statistics could be improved by verifying the status at the end of every year, in relationship with information already available for each individual. As well, a closer follow-up of unusual cases such as long continuers would be helpful.

New information

To better understand what prevents apprentices from completing their training and writing the exam for certification, two variables could be considered for addition to the RAIS on an annual basis:

- the number of hours spent on-the-job each year
- the number of attempts of the certification exam

Information on apprentice's previous educational attainment, marital status, city of residence, and certification requirements would also help profile patterns of completion.

Reasons for leaving

RAIS comprises a long list of reasons for leaving. However, the list from jurisdictions is not necessarily the same as the one provided in the RAIS template. Consequently there is a translation of categories from one list to another that results in a loss in the quality of information, since the category 'other' seems to collect any information which is difficult to match. Understanding the reasons for non-completion would benefit from an improvement of the match between jurisdictions and RAIS categories.

3. Further analysis

Examining the *mobility of apprentices* between jurisdictions to see how one jurisdiction may supplement the needs of skills of another jurisdiction could further our understanding of apprenticeship programs and completion in Canada. RAIS does not currently allow inter-jurisdictional linking since new identifiers are created once individuals start in a new jurisdiction.

More in-depth analysis is needed to understand the *relative* importance of various factors affecting completion. Results indicate that age may be a factor that affects completion, indicating that factors relative to age may also affect completion. Educational attainment and literacy levels may be part of the explanation of this relationship as may be economic factors. Current results show that provinces have slightly different completion rates. A further analysis of how economic cycles impact completion may help our understanding of provincial variation.

What makes some trades more successful in terms of completion than others is a key question. Is it demand in the labour market or is it something specific to the trade? Are there best practices to share? From preliminary analysis, it is not clear that the compulsory or voluntary characteristic of a trade affect the completion rate. Is it really the case?

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Results have shown that apprentices may still be learning a trade more than a decade after they started. Are there any factors that explain long continuation?

Results also showed that almost half of the cohort dropped out. More research could identify factors that may improve the fit between a person and a potential program. As well, it seemed that individuals were not necessarily dropping out early on during the program. In this case, the reason for leaving the program might not be due to a lack of fit. Research could be done to see if specific factors leading to dropping out are time sensitive.

Conclusion

Potential shortages in specific trades and specific areas of the country have been forecasted for the coming years in Canada. To help build a high-skills economy, Human Resource and Skills Development Canada (HRSDC) has been engaged with Canadian jurisdictions in studying the current situation in its various dimensions.

This report has followed for 11 years one cohort who started their program in 1992 in three jurisdictions: New Brunswick, Ontario and Alberta, using the Registered Apprenticeship Information System (RAIS).

Over the 1992 to 2002 period, about half of apprentices completed the trade they had started in 1992 and almost half dropped out. Results showed that learning paths are not straightforward. A person can change statuses once or more in the course of 11 years.

Many potential factors can influence non-completion as among others limited employment opportunities, training, family reasons, not enough tradespersons for supervision, the literacy level, and a lack of employment once certified. Many of these factors require further research to be fully understood.

Improvements to RAIS, such as knowing the number of hours spent on the job each year and the attempts of the certification exam would lead to greater opportunities to better understand apprenticeship programs in Canada.

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Appendix 1

List of trades

1992 Trades for the provinces of New Brunswick, Ontario and Alberta

	New Brunswick	Ontario	Alberta	Red Seal trades
Building construction trades				
Bricklayer	X	X	X	X
Building service technician		X		
Cabinet maker	X	X	X	X
Carpenter	X	X	X	X
Concrete finisher		X		X
Drywall installer		X		
Floor covering installer		X	X	X
Glazier		X	X	X
Insulator installer (heat and frost)	X	X	X	X
Lather (interior systems mechanic)		X	X	X
Native residential construction worker		X		
Painter and decorator	X	X	X	X
Plasterer		X		
Roofer	X	X	X	X
Stone mason		X		
Tile setter		X	X	X
Woodworker		X		
Electrical, electronics and related				
Appliance service technician-serviceman	X	X	X	X
Communication electrician (telephone industry)		X		
Construction electrician	X	X	X	X
Control maintenance (thermal)		X		
Electric metering		X		
Electric motor system technician		X	X	X
Electrical mechanic	X	X		
Electrical technician		X		
Electrician (communications)			X	
Electrician (domestic and rural)		X		
Electrician (powerhouse operator)		X		
Electrician signal maintenance		X		
Electronics (telecommunications)		X		
Electronics industrial		X		
Electronics technician		X		
Electronics technician (consumer products)		X	X	X
Industrial electrician	X	X		X
Maintenance electrician construction and maintenance		X		
Marine electrician	X			
Power maintenance electrician		X		
Power system electrician			X	
Power system operator	X			
Powerline technician	X	X	X	X
Switchboard operator (Electrical power)	X			

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1992 Trades for the provinces of New Brunswick, Ontario and Alberta – Continued

	New Brunswick	Ontario	Alberta	Red Seal trades
Food and services trades				
Assistant cook		X		
Baker		X	X	X
Barber	X			
Butcher		X		
Cook	X	X	X	X
Firefighter	X			
Graphic arts			X	
Gunsmith		X		
Hairdresser/Hairstylist		X	X	X
Horticulture		X		
Jeweller watchmaker		X		
Locksmith		X		
Meat cutter		X		
Upholsterer		X		
Industrial and related mechanical trades				
Boilermaker	X	X	X	X
Construction millwright	X	X		
Control mechanic (except electrical)		X		
Engineering assistant Arch. and Engineer Technician	X			
Industrial instrument mechanic and repair	X	X	X	X
Industrial mechanic (millwright)	X	X	X	X
Industrial plant operator		X		
Instrument technician		X		
Machine repair mechanic (equipment)		X		
Mechanical fitter		X		
Oil burner mechanic	X			X
Production equipment mechanic	X			
Refrigeration and air conditioning mechanic	X	X	X	X
Sawfiler			X	
Stationary engineer (all classes)	X			
Transport refrigeration mechanic			X	
Metal fabricating trades				
Automatic machinist		X		
Gasfitter		X	X	
Ironworker (generalist)		X	X	X
Machinist	X	X	X	X
Metal fabricator (fitter)	X		X	X
Moulder and engraver		X		
Patternmaking		X		
Plumber	X	X	X	X
Reinforcing steel erector		X		
Sheet metal worker	X	X	X	X
Sprinkler system installer	X	X	X	X
Steamfitter/Pipefitter	X	X	X	X
Steel and plate worker		X		
Steel making		X		
Tool and die maker		X		X
Welder	X	X	X	X

1992 Trades for the provinces of New Brunswick, Ontario and Alberta – Concluded

	New Brunswick	Ontario	Alberta	Red Seal trades
Motor vehicle and heavy equipment				
Air-cooled and marine engeneering mechanic		X		
Aircraft maintenance technician		X		
Automotive painter	X	X		X
Automotive service technician	X	X	X	X
Crane and hoist operator			X	
Farm equipment mechanic		X	X	X
Heavy duty equipment technician	X	X	X	X
Hoisting engineer - tower crane		X		
Mobile crane operator		X		X
Motor vehicle body repairer (metal and paint)	X	X	X	X
Motor vehicle fuel and electronics systems mechanic	X	X		
Motor vehicle steering suspension and brakes mechanic	X	X		
Motor vehicle transmission mechanic		X		
Motorcycle repair mechanic		X	X	X
Partsperson (automotive, industrial engine and equipment)		X	X	X
Recreation vehicle service technician		X	X	X
Small equipment mechanic	X	X		
Truck and transport mechanic	X			X
Truck-trailer repairer		X		X
Water well driller		X	X	
Other trades				
Bookbinder (finisher)		X		
Brewer		X		
Computers		X		
Draftsman		X		
Landscape gardener		X	X	
Plastics technician		X		
Pool and spa installation and service technician		X		
Printer - pressman - letterpress		X		
Springmaker		X		
Staker-detailer	X			
Survey technician	X			
Taxidermist		X		

Note: The trades that are in bold represent the main trades in the appropriate province. The minimum number of apprentices required to be a main trade varied between 25 and 50 given the province.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

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Appendix 2: Provincial Tables

New Brunswick

Table 1

Distribution of 1992 new apprentices by sex and main trade, New Brunswick, 1992

	Total	Male	Female
	Number	%	%
Total population	904	92.3	7.7
1992 Main trades			
Building construction trades	167	x	x
Electrical, electronics and related	132	x	x
Food and service trades[1]	121	47.9	52.1
Industrial and mechanical trades	136	x	x
Metal fabricating trades	150	x	x
Motor vehicle and heavy equipment	198	x	x
Other trades			

1. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 1.1

Distribution of 1992 new apprentices by age group and main trade, New Brunswick, 1992

		Age					
	Total	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more
	Number	%	%	%	%	%	%
Total 1992 registered apprentices	904	5.9	41.0	23.0	14.2	8.6	7.3
Building construction trades							
Carpenter	133	8.3	41.4	21.8	18.0	4.5	6.0
Other	34	0.0	35.3	29.4	29.4	x	x
Motor vehicle and heavy equipment							
Automotive service technician	95	11.6	54.7	27.4	x	x	x
Truck and transport mechanic	26	0.0	61.5	x	x	x	0.0
Other	77	x	51.9	14.3	14.3	10.4	x
Electrical, electronics and related							
Construction electrician	104	5.8	38.5	26.9	17.3	5.8	5.8
Other	28	x	x	28.6	32.1	x	x
Industrial and mechanical trades							
Industrial mechanic (millwright)	34	0.0	32.4	x	x	32.4	x
Other	102	x	31.4	29.4	20.6	x	10.8
Metal fabricating trades							
Plumber/Gasfitter	50	12.0	34.0	18.0	x	16.0	x
Welder	37	0.0	70.3	21.6	x	x	0.0
Machinist	30	x	36.7	x	x	x	x
Other	33	x	66.7	21.2	0.0	x	x
Food and service trades and Other trades[1]							
Cook	72	x	25.0	25.0	19.4	x	15.3
Other	49	x	34.1	27.3	x	15.9	18.4

1. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2

Distribution of 1992 new apprentices and completers, by age group and main trade, New Brunswick, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total completers	
	Years	Years	Number	Number	%
Total population			904	452	50.0
Age group					
15 to 24		6	424	223	52.6
25 to 29		5	208	103	49.5
30 to 39		5	206	102	49.5
40 or more		4	66	24	36.4
1992 Main trades					
Building construction trades					
Carpenter	4	5	133	30	22.6
Other[1]		4	34	14	41.2
Electrical, electronics and related					
Construction electrician	5	7	104	55	52.9
Other		5	28	19	67.9
Motor vehicle and heavy equipment					
Automotive service technician	4	5	95	53	55.8
Truck and transport mechanic	4	5	26	11	42.3
Other		5	77	38	49.4
Food and service trades and Other trades[2]					
Cook	3	4	72	26	36.1
Other		2	49	29	59.2
Industrial and mechanical trades					
Industrial mechanic (millwright)	4	4.5	34	22	64.7
Other		5	102	64	62.7
Metal fabricating trades					
Plumber/Gasfitter	4	5.5	50	28	56.0
Welder	3	5	37	23	62.2
Machinist	4	5	30	20	66.7
Other		6	33	20	60.6

1. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

2. For the province of New Brunswick, Food and service trades include Other trades.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

Table 2.1

Distribution of completers by characteristics of completion, by age group and main trade, New Brunswick, 1992-2002

		Characteristics of completion			
				Years taken to complete beyond expected duration	
	Total completers	Left after one completion with no interruption[1]	Others	1 year or less	2 years or more
	Number	%	%	%	%
Total population	452	88.1	11.9	59.5	40.5
Age group					
15 to 24	223	85.7	14.3	52.0	48.0
25 to 29	103	88.3	11.7	66.0	34.0
30 to 39	102	91.2	8.8	64.7	35.3
40 or more	24	x	x	x	x
1992 Main trades					
Building construction trades					
Carpenter	30	100.0	0.0	63.3	36.7
Other	14	x	x	x	x
Electrical, electronics and related					
Construction electrician	55	85.5	14.5	36.4	63.6
Other	19	x	x	63.2	36.8
Motor vehicle and heavy equipment					
Automotive service technician	53	84.9	15.1	67.9	32.1
Truck and transport mechanic	11	x	x	x	x
Other	38	78.9	21.1	50.0	50.0
Food and service trades and Other trades[2]					
Cook	26	100.0	0.0	x	x
Other	29	x	x	x	x
Industrial and mechanical trades					
Industrial mechanic (millwright)	22	100.0	0.0	x	x
Other	64	87.5	12.5	53.1	46.9
Metal fabricating trades					
Plumber/Gasfitter	28	x	x	50.0	50.0
Welder	23	x	x	43.5	56.5
Machinist	20	x	x	70.0	30.0
Other	20	x	x	40.0	60.0

1. Numbers include completions leading to a certificate granted to apprentices and also a few tradespersons.
2. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2.2

Distribution of 1992 new apprentices and completers, by trade[1] and duration of program, New Brunswick, 1992-2002

Program duration from institutions	Total 1992 registered	Total completers
	Number	%
Total population	904	50.0
1 year	9	66.7
Industrial and mechanical trades		
Other	9	66.7
2 years	59	54.2
Food and service trades		
Other	36	50.0
Motor vehicle and heavy equipment		
Other	x	x
Industrial and mechanical trades		
Other	12	58.3
Other trades		
Other	x	x
3 years	197	49.7
Food and service trades		
Cook	72	36.1
Other	8	87.5
Metal fabricating trades		
Welder	37	62.2
Motor vehicle and heavy equipment		
Other	35	54.3
Building construction trades		
Other	24	37.5
Industrial and mechanical trades		
Other	14	92.9
Electrical, electronics and related		
Other	x	x
Other trades		
Other	x	x
4 years	529	48.6
Electrical, electronics and related		
Other	x	x
Building construction trades		
Carpenter	133	22.6
Other	x	x
Motor vehicle and heavy equipment		
Automotive service technician	95	55.8
Truck and transport mechanic	26	42.3
Other	35	45.7
Metal fabricating trades		
Plumber/Gasfitter	50	56.0
Machinist	30	66.7
Other	33	60.6
Industrial and mechanical trades		
Industrial mechanic (millwright)	34	64.7
Other	67	56.7
5 years or more	110	53.6
Electrical, electronics and related		
Construction electrician	x	x
Other	x	x

1. A trade can have more than one program duration, given provincial duration.
x Data not available.
Source. *Statistics Canada, Registered Apprenticeship Information System.*

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Table 3

Distribution of 1992 new apprentices and dropouts[1], by age group and main trade, New Brunswick, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total dropouts	
	Years	Years	Number	Number	%
Total population			904	451	49.9
Age group					
15 to 24		4	424	202	47.6
25 or more		4	480	249	51.9
1992 Main trades					
Building construction trades					
Carpenter	4	5	133	93	69.9
Other[2]		5.5	34	20	58.8
Electrical, electronics and related					
Construction electrician	5	4	104	52	50.0
Other		5	28	11	39.3
Motor vehicle and heavy equipment					
Automotive service technician	4	3	95	47	49.5
Truck and transport mechanic	4	3	26	17	65.4
Other		4.5	77	44	57.1
Food and service trades and Other trades[3]					
Cook	3	4	72	42	58.3
Other		3	49	21	42.9
Industrial and mechanical trades					
Industrial mechanic (millwright)	4	3.5	34	12	35.3
Other		4	102	36	35.3
Metal fabricating trades					
Plumber/Gasfitter	4	3.5	50	18	36.0
Welder	3	3.5	37	14	37.8
Machinist	4	6	30	10	33.3
Other		5	33	14	42.4

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.
3. For the province of New Brunswick, Food and service trades include Other trades.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

Table 3.1

Distribution of dropouts[1] by their characteristics, by age group and main trade, New Brunswick, 1992-2002

	Characteristics							
							Years taken to dropout beyond expected duration of completion	
	Total dropouts	Completers	Non-completers	One final interruption[2]	One temporary interruption[2]	Multiple interruptions[2]	1 year or less	2 years or more
	Number	%	%	%	%	%	%	%
Total population	451	5.8	94.2	87.6	6.2	6.2	62.5	37.5
Age group								
15 to 24	202	8.4	91.6	86.1	7.4	6.4	60.4	39.6
25 to 29	105	x	x	87.6	x	x	63.8	36.2
30 to 39	103	x	x	87.4	x	x	66.0	34.0
40 or more	41	0.0	100.0	95.1	x	x	61.0	39.0
1992 Main trades								
Building construction trades								
Carpenter	93	x	x	97.8	x	x	52.7	47.3
Other	20	x	x	95.0	x	x	40.0	60.0
Electrical, electronics and related								
Construction electrician	52	x	x	80.8	x	x	84.6	15.4
Other	11	x	x	63.6	x	x	x	x
Motor vehicle and heavy equipment								
Automotive service technician	47	x	x	80.9	x	x	78.7	21.3
Truck and transport mechanic	17	x	x	70.6	x	x	x	x
Other	44	x	x	77.3	x	x	50.0	50.0
Food and service trades and Other trades[3]								
Cook	42	x	x	92.9	x	x	66.7	33.3
Other	21	x	x	95.2	x	x	52.4	47.6
Industrial and mechanical trades								
Industrial mechanic (millwright)	12	x	x	91.7	x	x	x	x
Other	36	x	x	83.3	x	x	55.6	44.4
Metal fabricating trades								
Plumber/Gasfitter	18	x	x	94.4	x	x	66.7	33.3
Welder	14	x	x	92.9	x	x	57.1	42.9
Machinist	10	x	x	80.0	x	x	x	x
Other	14	x	x	100.0	0.0	0.0	57.1	42.9

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back). Dropouts can also be completers or continuers.
2. Interruptions do not include time away after completing and before studying a new trade.
3. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

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Table 3.2

Distribution of 1992 new apprentices and dropouts[1], by duration of program, New Brunswick, 1992-2002

	Total 1992 registered	Total dropouts
	Number	%
Total population	904	49.9
Progam duration from institutions		
1 year	9	x
2 years	59	x
3 years	197	50.3
4 years	529	50.5
5 years or more	110	50.0

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 4

Distribution of 1992 new apprentices and 2002 continuers, by age group and main trade, New Brunswick

	Total 1992 registered	2002 continuers
	Number	%
Total population	904	5.8
Age group		
15 to 24	424	7.1
25 or more	480	4.6
1992 Main trades		
Building construction trades		
Carpenter	133	7.5
Other	34	x
Electrical, electronics and related		
Construction electrician	104	x
Other	28	x
Motor vehicle and heavy equipment		
Automotive service technician	95	x
Truck and transport mechanic	26	x
Other	77	x
Food and service trades and Other trades[1]		
Cook	72	8.3
Other	49	x
Industrial and mechanical trades		
Industrial mechanic (millwright)	34	x
Other	102	6.9
Metal fabricating trades		
Plumber/Gasfitter	50	12.0
Welder	37	x
Machinist	30	x
Other	33	x

1. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 4.1

Distribution of 2002 continuers by their characteristics, by age group and main trade, New Brunswick

		Characteristics		
	2002 continuers	Without a previous completion	Same trade	Without a previous interruption[1]
	Number	%	%	%
Total population	52	73.1	57.7	75.0
Age group				
15 to 24	30	70.0	56.7	76.7
25 or more	22	77.3	59.1	72.7
1992 Main trades				
Building construction trades				
Carpenter	10	x	x	x
Other	x	x	x	x
Electrical, electronics and related				
Construction electrician	x	x	x	x
Other	x	x	x	x
Motor vehicle and heavy equipment				
Automotive service technician	x	x	x	x
Truck and transport mechanic	x	x	x	x
Other	x	x	x	x
Food and service trades and Other trades[2]				
Cook	6	x	x	x
Other	x	x	x	x
Industrial and mechanical trades				
Industrial mechanic (millwright)	x	x	x	x
Other	7	x	x	x
Metal fabricating trades				
Plumber/Gasfitter	6	x	x	x
Welder	x	x	x	x
Machinist	x	x	x	x
Other	x	x	x	x

1. Interruptions do not include time away after completing and before studying a new trade.
2. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

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Table 5

Distribution of 1992 new apprentices and certified apprentices[1] and tradespersons, by age group and main trade, New Brunswick, 1992-2002

	Program duration from institutions	Total 1992 registered	Certified apprentices and tradespersons
	Years	Number	%
Total population		904	51.8
Age group			
15 to 24		424	54.5
25 to 29		208	51.9
30 or more		272	47.4
1992 Main trades			
Building construction trades			
Carpenter	4	133	22.6
Other[2]		34	41.2
Electrical, electronics and related			
Construction electrician	5	104	52.9
Other		28	71.4
Motor vehicle and heavy equipment			
Automotive service technician	4	95	60.0
Truck and transport mechanic	4	26	57.7
Other		77	49.4
Food and service trades and Other trades[3]			
Cook	3	72	38.9
Other		49	61.2
Industrial and mechanical trades			
Industrial mechanic (millwright)	4	34	67.6
Other		102	64.7
Metal fabricating trades			
Plumber/Gasfitter	4	50	56.0
Welder	3	37	62.2
Machinist	4	30	70.0
Other		33	60.6

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.
3. For the province of New Brunswick, Food and service trades include Other trades.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

Table 5.1

Distribution of certified apprentices[1] and tradespersons by duration for certification, by age group and main trade, New Brunswick, 1992-2002

		Duration for certification			
	Certified apprentices and tradespersons	1 to 3 years (1992-1994)	4 to 6 years (1995-1997)	7 years or more (1998-2002)	Total trades-person[2]
	Number	%	%	%	%
Total population	468	17.5	54.5	22.9	5.1
Age group					
15 to 24	231	10.8	57.1	27.3	4.8
25 to 29	108	21.3	54.6	x	x
30 or more	129	26.4	49.6	x	x
1992 Main trades					
Building construction trades					
Carpenter	30	x	56.7	26.7	x
Other	14	x	x	x	x
Electrical, electronics and related					
Construction electrician	55	0.0	36.4	63.6	0.0
Other	20	x	50.0	x	x
Motor vehicle and heavy equipment					
Automotive service technician	57	x	63.2	15.8	x
Truck and transport mechanic	15	0.0	60.0	x	x
Other	38	x	65.8	15.8	x
Food and service trades and Other trades[3]					
Cook	28	42.9	39.3	x	x
Other	30	76.7	x	x	x
Industrial and mechanical trades					
Industrial mechanic (millwright)	23	x	73.9	x	x
Other	66	x	65.2	19.7	x
Metal fabricating trades					
Plumber/Gasfitter	28	x	64.3	32.1	x
Welder	23	x	56.5	26.1	x
Machinist	21	x	66.7	x	x
Other	20	x	55.0	35.0	x

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. Tradespersons are individuals who started as new apprentices in 1992, did not complete their apprenticeship program and obtained certification afterwards.
3. For the province of New Brunswick, Food and service trades include Other trades.

x Data not available.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

Table 6

Longitudinal distribution of 1992 new apprentices learning status at the end of each year, New Brunswick, 1992-2002

		Total	New Brunswick	
	Years	Number	Number	%
Registered apprentices		14,094	904	6.4
Total learning status in 2002[1]		16,239	995	6.1
Continuation status				
	1992	13,344	879	97.2
	1993	11,984	777	86.0
	1994	10,191	660	73.0
	1995	7,977	511	56.5
	1996	5,789	351	38.8
	1997	3,824	261	28.9
	1998	2,868	206	22.8
	1999	2,134	159	17.6
	2000	1,763	107	11.8
	2001	1,552	81	9.0
	2002	1,307	52	5.8
Cumulative total of discontinuations[2]				
	1992	714	25	5.2
	1993	1,594	101	21.0
	1994	2,845	178	36.9
	1995	3,677	246	51.0
	1996	4,402	307	63.7
	1997	5,584	344	71.4
	1998	6,250	376	78.0
	1999	6,844	407	84.4
	2000	7,206	440	91.3
	2001	7,415	462	95.9
	2002	7,575	482	100.0
Cumulative total of completions[2]				
	1992	36	0	0.0
	1993	603	32	6.9
	1994	1,757	85	18.4
	1995	3,382	180	39.0
	1996	5,042	287	62.3
	1997	6,011	347	75.3
	1998	6,517	381	82.6
	1999	6,818	406	88.1
	2000	7,005	434	94.1
	2001	7,162	449	97.4
	2002	7,357	461	100.0
Cumulative total of certifications[2]				
	1992	39	0	0.0
	1993	545	32	6.6
	1994	1,719	86	17.6
	1995	3,371	182	37.3
	1996	5,081	290	59.4
	1997	6,101	353	72.3
	1998	6,645	391	80.1
	1999	6,988	422	86.5
	2000	7,227	451	92.4
	2001	7,435	473	96.9
	2002	7,665	488	100.0

1. This total represents the sum of learning statuses related to the completion of a program. Certifications are excluded not to duplicate completion figures.
2. Apprentices can drop out more than once or have more than one completion or certification.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Appendix 2: Provincial Tables

Ontario

Table 1
Distribution of 1992 new apprentices by sex and main trade, Ontario, 1992

	Total	Male	Female
	Number	%	%
Total population	8,342	91.1	8.9
1992 Main trades			
Building construction trades	1,581	93.1	6.9
Electrical, electronics and related	1,192	96.1	3.9
Food and service trades	964	52.3	47.7
Industrial and mechanical trades	654	98.2	1.8
Metal fabricating trades	1,209	97.4	2.6
Motor vehicle and heavy equipment	2,477	98.2	1.8
Other trades	265	85.3	14.7

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

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Table 1.1

Distribution of 1992 new apprentices by age group and main trade, Ontario, 1992

		Age					
	Total	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more
	Number	%	%	%	%	%	%
Total 1992 registered apprentices	8,342	11.9	36.5	21.3	14.3	7.8	8.2
Building construction trades							
Carpenter	559	10.7	39.5	27.0	13.2	5.0	4.5
Bricklayer	120	11.7	35.8	30.8	14.2	x	x
Drywall installer	103	x	32.0	24.3	26.2	x	8.7
Roofer	122	x	30.3	18.9	31.1	x	9.8
Building service technician	181	0.0	9.9	13.8	20.4	15.5	40.3
Native residential construction worker	98	x	29.6	26.5	22.4	9.2	x
Other	398	5.8	26.1	28.1	18.6	11.6	9.8
Motor vehicle and heavy equipment							
Automotive service technician	1,672	20.6	44.9	17.8	10.3	4.0	2.3
Motor vehicle body repairer (metal and paint)	240	22.5	45.4	16.7	7.1	5.0	3.3
Heavy duty equipment mechanic technician	73	8.2	19.2	21.9	20.5	16.4	13.7
Motor vehicle steering suspension and brakes mechanics	135	x	26.7	27.4	19.3	16.3	x
Mobile crane operator	51	x	29.4	25.5	21.6	x	13.7
Other	306	10.8	40.8	21.2	11.4	8.5	7.2
Electrical, electronics and related							
Construction electrician	693	9.2	47.5	23.7	12.8	4.5	2.3
Industrial electrician	366	x	x	7.7	16.1	25.1	43.7
Powerline technician	52	x	34.6	34.6	15.4	13.5	x
Other	81	x	x	17.3	14.8	24.7	25.9
Industrial and mechanical trades							
Industrial mechanic (millwright)	302	2.3	17.5	25.5	25.8	15.2	13.6
Refrigeration and air conditioning mechanic	173	6.4	32.4	29.5	19.7	x	x
Industrial plant operator	99	0.0	0.0	15.2	21.2	30.3	33.3
Other	80	x	31.3	31.3	20.0	10.0	x
Metal fabricating trades							
Plumber/Gasfitter	326	12.6	45.7	20.9	14.7	3.7	2.5
Machinist	233	13.3	36.5	19.7	16.3	7.3	6.9
Sheet metal worker	219	11.4	45.7	26.0	11.0	x	x
Tool and die maker	149	20.8	43.0	14.8	14.1	x	x
Moulder and engraver	94	25.5	45.7	12.8	9.6	x	x
Other	188	5.9	41.5	25.0	13.3	8.5	5.9
Food and service trades							
Cook	436	13.8	42.7	23.4	9.4	5.0	5.7
Hairdresser/Hairstylist	394	21.8	43.1	15.2	9.4	5.6	4.8
Other	134	12.7	23.1	23.9	17.9	5.2	17.2
Other trades							
Landscape gardener	160	9.4	35.6	26.3	16.3	7.5	5.0
Other	105	6.7	38.1	23.8	13.3	5.7	12.4

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2

Distribution of 1992 new apprentices and completers, by age group and main trade, Ontario, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total completers	
	Years	Years	Number	Number	%
Total population			8,342	3,905	46.8
Age group					
15 to 19		5	990	532	53.7
20 to 24		5	3,053	1,532	50.2
25 to 29		4	1,773	780	44.0
30 to 39		4	1,842	815	44.2
40 or more		4	684	246	36.0
1992 Main trades					
Motor vehicle and heavy equipment					
Automotive service technician	5	5	1,672	909	54.4
Motor vehicle body repairer (metal and paint)	1	5	240	72	30.0
Motor vehicle steering suspension and brakes mechanic	3	4	135	52	38.5
Heavy duty equipment mechanic technician	4, 5, 6	4	73	50	68.5
Mobile crane operator	3	3.5	51	32	62.7
Other[1]		4	306	124	40.5
Electrical, electronics and related					
Construction electrician	5	5	693	447	64.5
Industrial electrician	1, 4, 5	11	366	166	45.4
Powerline technician	4	5	52	21	40.4
Other		6	81	57	70.4
Building construction trades					
Carpenter	1	4	559	193	34.5
Building service technician	2, 4	3	181	110	60.8
Roofer	3	3	122	26	21.3
Bricklayer	4	4	120	17	14.2
Drywall installer	1	1	103	40	38.8
Native residential construction worker	2	2	98	34	34.7
Other		5	398	76	19.1
Food and service trades					
Cook	3	4	436	139	31.9
Hairdresser/Hairstylist	1	3	394	191	48.5
Other		4	134	31	23.1
Metal fabricating trades					
Plumber/Gasfitter	4, 5	5	326	205	62.9
Machinist	1, 2, 3, 4, 6, 8	4	233	115	49.4
Sheet metal worker	4, 5	5	219	124	56.6
Tool and die maker	1, 2, 4	5	149	97	65.1
Moulder and engraver	1	5	94	43	45.7
Other		5	188	86	45.7
Industrial and mechanical trades					
Industrial mechanic (millwright)	3	4	302	193	63.9
Refrigeration and air conditioning mechanic	4, 5	5	173	110	63.6
Industrial plant operator	4	5	99	22	22.2
Other		5	80	49	61.3
Other trades					
Landscape gardener	1	3	160	27	16.9
Other		4	105	47	44.8

1. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2.1

Distribution of completers by characteristics of completion, by age group and main trade, Ontario, 1992-2002

		Characteristics of completion			
				Years taken to complete beyond expected duration	
	Total completers	Left after one completion with no interruption[1]	Others	1 year or less	2 years or more
	Number	%	%	%	%
Total population	3,985	80.4	19.6	60.7	39.3
Age group					
15 to 19	532	85.0	15.0	56.6	43.4
20 to 24	1,532	84.3	15.7	60.6	39.4
25 to 29	780	82.8	17.2	65.8	34.2
30 to 39	815	73.1	26.9	62.1	37.9
40 or more	246	63.4	36.6	50.4	49.6
1992 Main trades					
Motor vehicle and heavy equipment					
Automotive service technician	909	86.6	13.4	83.9	16.1
Motor vehicle body repairer (metal and paint)	72	84.7	15.3	x	x
Motor vehicle steering suspension and brakes mechanic	52	67.3	32.7	67.3	32.7
Heavy duty equipment mechanic technician	50	28.0	72.0	78.0	22.0
Mobile crane operator	32	x	x	71.9	28.1
Other	124	75.8	24.2	63.7	36.3
Electrical, electronics and related					
Construction electrician	447	84.8	15.2	68.7	31.3
Industrial electrician	166	24.1	75.9	19.3	80.7
Powerline technician	21	66.7	33.3	52.4	47.6
Other	57	68.4	31.6	42.1	57.9
Building construction trades					
Carpenter	193	88.1	11.9	9.3	90.7
Building service technician	110	88.2	11.8	76.4	23.6
Roofer	26	100.0	0.0	61.5	38.5
Bricklayer	17	x	x	x	x
Drywall installer	40	32.5	67.5	67.5	32.5
Native residential construction worker	34	38.2	61.8	73.5	26.5
Other	76	x	x	46.1	53.9
Food and service trades					
Cook	139	89.9	10.1	70.5	29.5
Hairdresser/Hairstylist	191	94.8	5.2	17.8	82.2
Other	31	x	x	61.3	38.7
Metal fabricating trades					
Plumber/Gasfitter	205	83.9	16.1	80.5	19.5
Machinist	115	72.2	27.8	20.9	79.1
Sheet metal worker	124	88.7	11.3	80.6	19.4
Tool and die maker	97	80.4	19.6	x	x
Moulder and engraver	43	x	x	x	x
Other	86	83.7	16.3	68.6	31.4
Industrial and mechanical trades					
Industrial mechanic (millwright)	193	77.7	22.3	81.9	18.1
Refrigeration and air conditioning mechanic	110	81.8	18.2	82.7	17.3
Industrial plant operator	22	x	x	72.7	27.3
Other	49	71.4	28.6	59.2	40.8
Other trades					
Landscape gardener	27	74.1	25.9	22.2	77.8
Other	47	x	x	74.5	25.5

1. Numbers include completions leading to a certificate granted to apprentices and also a few tradespersons.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2.2

Distribution of 1992 new apprentices and completers, by trade[1] and duration of program, Ontario, 1992-2002

Program duration from institutions	Total 1992 registered	Total completers
	Number	%
Total population	8,342	46.6
1 year	2,267	39.4
Building construction trades		
Carpenter	559	34.5
Drywall installer	103	38.8
Other	88	19.3
Food and service trades		
Hairdresser/Hairstylist	394	48.5
Other	33	24.2
Electrical, electronics and related		
Industrial electrician	290	42.8
Motor vehicle and heavy equipment		
Motor vehicle body repairer	240	30.0
Metal fabricating trades		
Tool and die maker	146	65.1
Machinist	170	50.6
Moulder and engraver	94	45.7
Other	x	x
Other trades		
Landscape gardener	160	16.9
Other	x	x
2 years	542	36.7
Food and service trades		
Other	x	x
Building construction trades		
Building service technician	128	49.2
Native residential construction worker	98	34.7
Other	x	x
Motor vehicle and heavy equipment		
Other	111	44.1
Industrial and mechanical trades		
Other	19	47.4
Metal fabricating trades		
Machinist	19	47.4
Tool and die maker	x	x
Other	x	x
Electrical, electronics and related		
Other	x	x
Other trades		
Other	45	48.9
3 years	997	32.7
Food and service trades		
Cook	436	31.9
Other	x	x
Metal fabricating trades		
Machinist	x	x
Other	49	34.7
Motor vehicle and heavy equipment		
Motor vehicle steering suspension and brakes mechanic	135	38.5
Mobile crane operator	51	62.7
Other	125	35.2
Building construction trades		
Roofer	122	21.3
Other	66	19.7

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Table 2.2 - Concluded

Distribution of 1992 new apprentices and completers, by trade[1] and duration of program, Ontario, 1992-2002

Program duration from institutions	Total 1992 registered Number	Total completers %
3 years		
Electrical, electronics and related		
Other	x	x
Other trades		
Other	x	x
4 years	1,102	45.2
Electrical, electronics and related		
Industrial electrician	x	x
Powerline technician	52	40.4
Other	72	70.8
Building construction trades		
Bricklayer	120	14.2
Building service technician	53	88.7
Other	159	23.3
Motor vehicle and heavy equipment		
Heavy duty equipment mechanic technician	x	x
Other	36	27.8
Metal fabricating trades		
Plumber/Gasfitter	x	x
Sheet metal work	x	x
Machinist	x	x
Tool and die maker	x	x
Other	x	x
Industrial and mechanical trades		
Industrial mechanic (millwright)	302	63.9
Refrigeration and air conditioning mechanic	x	x
Industrial plant operator	99	22.2
Other	60	65.0
Food and service trades		
Other	44	43.2
Other trades		
Other	50	46.0
5 years or more	3,414	58.1
Motor vehicle and heavy equipment		
Automotive service technician	1,672	54.4
Heavy duty equipment mechanic technician	66	68.2
Other	34	61.8
Electrical, electronics and related		
Construction electrician	693	64.5
Industrial electrician	75	56.0
Other	x	x
Metal fabricating trades		
Plumber/Gasfitter	325	63.1
Sheet metal work	199	60.3
Machinist	37	45.9
Other	91	64.8
Industrial and mechanical trades		
Refrigeration and air conditioning mechanic	171	63.7
Other	x	x
Building construction trades		
Other	x	x
Other trades		
Other	x	x

1. A trade can have more than one program duration, given provincial duration.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 3

Distribution of 1992 new apprentices and dropouts[1], by age group and main trade, Ontario, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total dropouts	
	Years	Years	Number	Number	%
Total population			8,342	4,298	51.5
Age group					
15 to 19		6	990	438	44.2
20 to 24		6	3,053	1,428	46.8
25 to 29		5	1,773	949	53.5
30 to 39		5	1,842	1,035	56.2
40 or more		3	684	448	65.5
1992 Main trades					
Motor vehicle and heavy equipment					
Automotive service technician	5	5	1,672	712	42.6
Motor vehicle body repairer (metal and paint)	1	5	240	138	57.5
Motor vehicle steering suspension and brakes mechanic	3	5	135	71	52.6
Heavy duty equipment mechanic technician	4, 5, 6	1	73	49	67.1
Mobile crane operator	3	5.5	51	16	31.4
Other[2]		4	306	172	56.2
Electrical, electronics and related					
Construction electrician	5	6	693	263	38.0
Industrial electrician	1, 4, 5	1	366	262	71.6
Powerline technician	4	6	52	33	63.5
Other		3	81	35	43.2
Building construction trades					
Carpenter	1	6	559	335	59.9
Building service technician	2, 4	2	181	69	38.1
Roofer	3	5	122	82	67.2
Bricklayer	4	7	120	94	78.3
Drywall installer	1	6	103	57	55.3
Native residential construction worker	2	7	98	76	77.6
Other		6	398	273	68.6
Food and service trades					
Cook	3	6	436	275	63.1
Hairdresser/Hairstylist	1	3	394	184	46.7
Other		3	134	93	69.4
Metal fabricating trades					
Plumber/Gasfitter	4, 5	6	326	121	37.1
Machinist	1, 2, 3, 4, 6, 8	4	233	108	46.4
Sheet metal worker	4, 5	6	219	98	44.7
Tool and die maker	1, 2, 4	3	149	54	36.2
Moulder and engraver	1	5	94	51	54.3
Other		5	188	107	56.9
Industrial and mechanical trades					
Industrial mechanic (millwright)	3	5	302	114	37.7
Refrigeration and air conditioning mechanic	4, 5	4	173	78	45.1
Industrial plant operator	4	10	99	76	76.8
Other		4	80	39	48.8
Other trades					
Landscape gardener	1	6	160	110	68.8
Other		7	105	53	50.5

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

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Table 3.1

Distribution of dropouts[1] by their characteristics, by age group and main trade, Ontario, 1992-2002

		Characteristics						
							Years taken to dropout beyond expected duration of completion	
	Total dropouts	Completers	Non-completers	One final interruption[2]	One temporary interruption[2]	Multiple interruptions[2]	1 year or less	2 years or more
	Number	%	%	%	%	%	%	%
Total population	4,298	12.3	87.7	76.1	16.6	7.3	50.8	49.2
Age group								
15 to 19	438	12.8	87.2	76.9	15.5	7.5	43.4	56.6
20 to 24	1,428	10.2	89.8	80.5	13.2	6.3	48.0	52.0
25 to 29	949	9.3	90.7	81.2	11.1	7.7	48.9	51.1
30 to 39	1,035	15.4	84.6	72.4	19.8	7.8	52.2	47.8
40 or more	448	17.6	82.4	58.9	32.6	8.5	67.6	32.4
1992 Main trades								
Motor vehicle and heavy equipment								
Automotive service technician	712	11.5	88.5	75.0	14.3	10.7	74.2	25.8
Motor vehicle body repairer (metal and paint)	138	5.1	94.9	83.3	10.1	6.5	22.5	77.5
Motor vehicle steering suspension and brakes mechanic	71	11.3	88.7	76.1	12.7	11.3	42.3	57.7
Heavy duty equipment mechanic technician	49	55.1	44.9	28.6	57.1	14.3	x	x
Mobile crane operator	16	x	x	68.8	x	x	43.8	56.3
Other	172	10.5	89.5	76.2	14.0	9.9	54.7	45.3
Electrical, electronics and related								
Construction electrician	263	18.6	81.4	72.2	19.8	8.0	70.0	30.0
Industrial electrician	262	44.3	55.7	14.5	75.6	9.9	93.1	6.9
Powerline technician	33	21.2	78.8	72.7	x	x	27.3	72.7
Other	35	40.0	60.0	48.6	x	x	68.6	31.4
Building construction trades								
Carpenter	335	5.1	94.9	89.3	8.4	2.4	10.7	89.3
Building service technician	69	8.7	91.3	79.7	x	x	87.0	13.0
Roofer	82	0.0	100.0	93.9	x	x	47.6	52.4
Bricklayer	94	x	x	90.4	x	x	36.2	63.8
Drywall installer	57	x	x	96.5	x	x	x	x
Native residential construction worker	76	17.1	82.9	92.1	x	x	13.2	86.8
Other	273	x	x	90.5	5.5	4.0	33.0	67.0
Food and service trades								
Cook	275	4.7	95.3	88.0	7.6	4.4	37.1	62.9
Hairdresser/Hairstylist	184	x	x	90.2	3.8	6.0	38.0	62.0
Other	93	x	x	89.2	x	x	59.1	40.9
Metal fabricating trades								
Plumber/Gasfitter	121	15.7	84.3	72.7	16.5	10.7	71.9	28.1
Machinist	108	17.6	82.4	67.6	19.4	13.0	47.2	52.8
Sheet metal worker	98	9.2	90.8	86.7	x	x	58.2	41.8
Tool and die maker	54	20.4	79.6	63.0	22.2	14.8	40.7	59.3
Moulder and engraver	51	x	x	82.4	x	x	17.6	82.4
Other	107	10.3	89.7	74.8	13.1	12.1	53.3	46.7

Table 3.1 – Concluded

Distribution of dropouts[1] by their characteristics, by age group and main trade, Ontario, 1992-2002

	Characteristics							
							Years taken to dropout beyond expected duration of completion	
	Total dropouts	Completers	Non-completers	One final interruption[2]	One temporary interruption[2]	Multiple interruptions[2]	1 year or less	2 years or more
	Number	%	%	%	%	%	%	%
Industrial and mechanical trades								
Industrial mechanic (millwright)	114	26.3	73.7	61.4	28.9	9.6	51.8	48.2
Refrigeration and air conditioning mechanic	78	23.1	76.9	64.1	28.2	7.7	83.3	16.7
Industrial plant operator	76	x	x	90.8	x	x	30.3	69.7
Other	39	28.2	71.8	59.0	x	x	61.5	38.5
Other trades								
Landscape gardener	110	x	x	90.9	x	x	15.5	84.5
Other	53	x	x	92.5	x	x	28.3	71.7

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back). Dropouts can also be completers or continuers.
2. Interruptions do not include time away after completing and before studying a new trade.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 3.2

Distribution of 1992 new apprentices and dropouts[1], by duration of program, Ontario, 1992-2002

	Total 1992 registered	Total dropouts
	Number	%
Total population	8,342	51.5
Progam duration from institutions		
1 year	2,287	57.0
2 years	542	65.5
3 years	997	61.5
4 years	1,102	52.6
5 years or more	3,414	42.4

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).

Source: *Statistics Canada, Registered Apprenticeship Information System.*

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Table 4

Distribution of 1992 new apprentices and 2002 continuers, by age group and main trade, Ontario

	Total 1992 registered	2002 continuers
	Number	%
Total population	8,342	12.0
Age group		
15 to 19	990	11.3
20 to 24	3,053	11.2
25 to 29	1,773	10.2
30 to 39	1,842	12.2
40 or more	684	20.0
1992 Main trades		
Motor vehicle and heavy equipment		
Automotive service technician	1,672	10.6
Motor vehicle body repairer (metal and paint)	240	20.0
Motor vehicle steering suspension and brakes mechanic	135	20.7
Mobile crane operator	51	11.8
Other	379	11.3
Electrical, electronics and related		
Construction electrician	693	7.6
Industrial electrician	366	38.0
Other	133	7.5
Building construction trades		
Carpenter	559	11.3
Building service technician	181	10.5
Roofer	122	14.8
Bricklayer	120	12.5
Drywall installer	103	7.8
Native residential construction worker	98	11.2
Other	398	16.1
Food and service trades		
Cook	436	9.9
Hairdresser/Hairstylist	394	6.9
Other	134	11.9
Metal fabricating trades		
Plumber/Gasfitter	326	8.3
Machinist	233	17.2
Sheet metal worker	219	5.0
Tool and die maker	149	7.4
Moulder and engraver	94	7.4
Other	179	5.0
Industrial and mechanical trades		
Industrial mechanic (millwright)	302	13.6
Refrigeration and air conditioning mechanic	173	5.8
Other	188	5.3
Other trades		
Landscape gardener	160	20.6
Other	105	10.5

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 4.1

Distribution of 2002 continuers by their characteristics, by age group and main trade, Ontario

		Characteristics		
	2002 continuers	Without a previous completion	Same trade	Without a previous interruption[1]
	Number	%	%	%
Total population	998	92.0	83.1	74.2
Age group				
15 to 19	112	90.2	71.4	77.7
20 to 24	343	88.6	76.1	80.2
25 to 29	181	91.2	80.7	80.7
30 to 39	225	93.8	91.6	72.9
40 or more	137	100.0	99.3	50.4
1992 Main trades				
Motor vehicle and heavy equipment				
Automotive service technician	177	92.7	80.2	82.5
Motor vehicle body repairer (metal and paint)	48	93.8	83.3	83.3
Motor vehicle steering suspension and brakes mechanic	28	78.6	71.4	89.3
Mobile crane operator	6	100.0	x	x
Other	43	86.0	81.4	79.1
Electrical, electronics and related				
Construction electrician	53	79.2	64.2	81.1
Industrial electrician	139	99.3	99.3	39.6
Other	10	100.0	x	x
Building construction trades				
Carpenter	63	98.4	85.7	76.2
Building service technician	19	68.4	100.0	68.4
Roofer	18	100.0	100.0	77.8
Bricklayer	15	100.0	80.0	73.3
Drywall installer	8	100.0	87.5	87.5
Native residential construction worker	11	x	x	72.7
Other	64	100.0	85.9	79.7
Food and service trades				
Cook	43	100.0	83.7	81.4
Hairdresser/Hairstylist	27	96.3	96.3	88.9
Other	16	100.0	75.0	68.8
Metal fabricating trades				
Plumber/Gasfitter	27	88.9	88.9	81.5
Machinist	40	87.5	82.5	85.0
Sheet metal worker	11	72.7	63.6	81.8
Tool and die maker	11	100.0	90.9	81.8
Moulder and engraver	7	x	x	x
Other	9	88.9	88.9	77.8
Industrial and mechanical trades				
Industrial mechanic (millwright)	41	82.9	82.9	78.0
Refrigeration and air conditioning mechanic	10	100.0	x	x
Other	10	90.0	70.0	70.0
Other trades				
Landscape gardener	33	97.0	78.8	78.8
Other	11	81.8	72.7	81.8

1. Interruptions do not include time away after completing and before studying a new trade.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 5

Distribution of 1992 new apprentices and certified apprentices[1] and tradespersons, by age group and main trade, Ontario, 1992-2002

	Program duration from institutions	Total 1992 registered	Certified apprentices and tradespersons
	Years	Number	%
Total population		8,342	48.5
Age group			
15 to 19		990	55.4
20 to 24		3,053	52.2
25 to 29		1,773	46.4
30 to 39		1,842	45.6
40 or more		684	34.9
1992 Main trades			
Motor vehicle and heavy equipment			
Automotive service technician	5	1,672	56.8
Motor vehicle body repairer (metal and paint)	1	240	35.0
Motor vehicle steering suspension and brakes mechanic	3	135	45.9
Heavy duty equipment mechanic technician	4, 5, 6	73	65.8
Mobile crane operator	3	51	70.6
Other[2]		306	43.8
Electrical, electronics and related			
Construction electrician	5	693	66.5
Industrial electrician	1, 4, 5	366	47.8
Powerline technician	4	52	44.2
Other		81	67.9
Building construction trades			
Carpenter	1	559	35.6
Building service technician	2, 4	181	54.1
Roofer	3	122	23.0
Bricklayer	4	120	18.3
Drywall installer	1	103	35.9
Native residential construction worker	2	98	15.3
Other		398	22.4
Food and service trades			
Cook	3	436	35.6
Hairdresser/Hairstylist	1	394	52.0
Other		134	22.4
Metal fabricating trades			
Plumber/Gasfitter	4, 5	326	63.8
Machinist	1, 2, 3, 4, 6, 8	233	55.4
Sheet metal worker	4, 5	219	58.9
Tool and die maker	1, 2, 4	149	65.1
Moulder and engraver	1	94	46.8
Other		188	47.3
Industrial and mechanical trades			
Industrial mechanic (millwright)	3	302	62.6
Refrigeration and air conditioning mechanic	4, 5	173	66.5
Industrial plant operator	4	99	15.2
Other		80	61.3
Other trades			
Landscape gardener	1	160	16.9
Other		105	44.8

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

Table 5.1

Distribution of certified apprentices[1] and tradespersons by duration for certification, by age group and main trade, Ontario, 1992-2002

		Duration for certification				
	Certified apprentices and tradespersons	1 to 3 years (1992-1994)	4 years (1995)	5 to 6 years (1996-1997)	7 years or more (1998-2002)	Total tradesperson[2]
	Number	%	%	%	%	%
Total population	4,043	20.2	23.9	31.6	18.7	5.6
Age group						
15 to 19	548	11.9	23.7	42.0	19.0	3.5
20 to 24	1,594	15.6	25.8	35.4	18.5	4.7
25 to 29	822	25.5	24.3	28.3	14.6	7.2
30 to 39	840	26.4	22.3	24.9	19.0	7.4
40 or more	239	29.3	16.3	16.7	32.6	5.0
1992 Main trades						
Motor vehicle and heavy equipment						
Automotive service technician	949	11.1	32.8	35.8	15.4	5.0
Motor vehicle body repairer (metal and paint)	84	13.1	20.2	39.3	13.1	14.3
Motor vehicle steering suspension and brakes mechanic	62	35.5	21.0	17.7	9.7	16.1
Heavy duty equipment mechanic technician	48	35.4	25.0	x	20.8	x
Mobile crane operator	36	44.4	16.7	x	x	x
Other	134	35.1	20.9	26.1	10.4	7.5
Electrical, electronics and related						
Construction electrician	461	6.3	15.4	44.9	30.4	3.0
Industrial electrician	175	x	x	12.0	70.3	6.3
Powerline technician	23	x	x	43.5	x	x
Other	55	16.4	16.4	16.4	50.9	0.0
Building construction trades						
Carpenter	199	27.6	30.2	22.6	x	x
Building service technician	98	64.3	15.3	13.3	7.1	0.0
Roofer	28	21.4	x	25.0	x	39.3
Bricklayer	22	x	x	31.8	x	x
Drywall installer	37	81.1	x	x	0.0	x
Native residential construction worker	15	x	0.0	40.0	x	0.0
Other	89	x	27.0	36.0	x	16.9
Food and service trades						
Cook	155	37.4	25.8	14.2	12.3	10.3
Hairdresser/Hairstylist	205	61.5	21.5	7.3	x	x
Other	30	36.7	33.3	23.3	x	x
Metal fabricating trades						
Plumber/Gasfitter	208	x	23.6	40.4	19.2	x
Machinist	129	15.5	33.3	22.5	20.2	8.5
Sheet metal worker	129	10.1	14.0	53.5	17.1	5.4
Tool and die maker	97	x	34.0	43.3	11.3	x
Moulder and engraver	44	x	31.8	52.3	x	x
Other	89	x	16.9	39.3	24.7	x
Industrial and mechanical trades						
Industrial mechanic (millwright)	189	20.6	32.3	32.3	10.1	4.8
Refrigeration and air conditioning mechanic	115	x	20.9	47.0	16.5	x
Industrial plant operator	15	0.0	x	60.0	x	0.0
Other	49	24.5	x	44.9	24.5	x
Other trades						
Landscape gardener	27	59.3	25.9	x	x	0.0
Other	47	36.2	31.9	21.3	x	x

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. Tradespersons are individuals who started as new apprentices in 1992, did not complete their apprenticeship program and obtained certification afterwards.

x Data not available.

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

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Table 6

Longitudinal distribution of 1992 new apprentices learning status at the end of each year, Ontario, 1992-2002

		Total	Ontario	
	Years	Number	Number	%
Registered apprentices		14,094	8,342	59.2
Total learning status in 2002[1]		16,239	9,582	59.0
Continuation status				
	1992	13,344	7,713	92.5
	1993	11,984	7,092	85.0
	1994	10,191	6,437	77.2
	1995	7,977	5,193	62.3
	1996	5,789	4,024	48.2
	1997	3,824	2,747	32.9
	1998	2,868	2,140	25.7
	1999	2,134	1,595	19.1
	2000	1,763	1,346	16.1
	2001	1,552	1,187	14.2
	2002	1,307	998	12.0
Cumulative total of discontinuations[2]				
	1992	714	593	12.8
	1993	1,594	1,033	22.3
	1994	2,845	1,583	34.2
	1995	3,677	1,991	43.0
	1996	4,402	2,425	52.4
	1997	5,584	3,313	71.6
	1998	6,250	3,758	81.2
	1999	6,844	4,180	90.3
	2000	7,206	4,407	95.2
	2001	7,415	4,542	98.2
	2002	7,575	4,627	100.0
Cumulative total of completions[2]				
	1992	36	36	0.9
	1993	603	274	6.9
	1994	1,757	908	22.9
	1995	3,382	1,875	47.4
	1996	5,042	2,692	68.0
	1997	6,011	3,158	79.8
	1998	6,517	3,440	86.9
	1999	6,818	3,628	91.7
	2000	7,005	3,730	94.3
	2001	7,162	3,817	96.5
	2002	7,357	3,957	100.0
Cumulative total of certifications[2]				
	1992	39	39	0.9
	1993	545	212	5.0
	1994	1,719	865	20.5
	1995	3,371	1,859	44.1
	1996	5,081	2,718	64.4
	1997	6,101	3,232	76.6
	1998	6,645	3,548	84.1
	1999	6,988	3,767	89.3
	2000	7,227	3,917	92.9
	2001	7,435	4,049	96.0
	2002	7,665	4,218	100.0

1. This total represents the sum of learning statuses related to the completion of a program. Certifications are excluded not to duplicate completion figures.

2. Apprentices can drop out more than once or have more than one completion or certification.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Appendix 2: Provincial Tables

Alberta

Table 1

Distribution of 1992 new apprentices by sex and main trade, Alberta, 1992

	Total	Male	Female
	Number	%	%
Total population	4,848	86.0	14.0
1992 Main trades			
Building construction trades	686	96.8	3.2
Electrical, electronics and related	692	99.0	1.0
Food and service trades	862	32.3	67.7
Industrial and mechanical trades	463	98.5	1.5
Metal fabricating trades	1,025	98.9	1.1
Motor vehicle and heavy equipment	1,027	97.3	2.7
Other trades	93	79.6	20.4

***Source**: Statistics Canada, Registered Apprenticeship Information System.*

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Table 1.1

Distribution of 1992 new apprentices by age group and main trade, Alberta, 1992

		Age					
	Total	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more
	Number	%	%	%	%	%	%
Total 1992 registered apprentices	4,848	11.1	34.6	22.3	15.6	8.6	8.8
Building construction trades							
Carpenter	408	10.8	33.3	28.9	16.9	6.6	3.4
Insulator installer (heat and frost)	74	x	36.5	25.7	16.2	9.5	x
Cabinet maker	64	17.2	42.2	17.2	10.9	x	x
Other	140	7.1	42.1	22.1	15.0	8.6	5.0
Motor vehicle and heavy equipment							
Automotive service technician	380	14.2	41.6	20.8	14.2	5.3	3.9
Motor vehicle body repairer (metal and paint)	144	18.8	48.6	18.8	9.0	x	x
Heavy duty equipment mechanic technician	280	8.6	29.3	21.8	18.6	12.9	8.9
Partsperson	110	10.0	31.8	20.9	24.5	x	x
Crane and hoist operator	51	0.0	19.6	29.4	17.6	17.6	15.7
Other	62	x	41.9	22.6	12.9	9.7	x
Electrical, electronics and related							
Construction electrician	518	14.3	36.5	22.6	13.9	7.7	5.0
Other	174	7.5	27.0	30.5	15.5	13.2	6.3
Industrial and mechanical trades							
Industrial mechanic (millwright)	153	x	14.4	24.8	34.0	15.0	x
Industrial instrument mechanic and repair	219	x	x	21.9	23.7	21.5	17.4
Refrigeration and air conditioning mechanic	54	x	20.4	27.8	27.8	11.1	x
Other	37	x	21.6	16.2	37.8	x	x
Metal fabricating trades							
Plumber/Gasfitter	275	6.5	36.0	27.6	19.6	5.8	4.4
Welder	388	10.8	34.3	21.9	18.3	6.4	8.2
Machinist	63	x	23.8	30.2	28.6	x	x
Sheet metal worker	91	13.2	29.7	25.3	14.3	x	x
Steamfitter/Pipefitter	112	5.4	23.2	30.4	17.0	13.4	10.7
Other	96	x	34.4	17.7	21.9	13.5	x
Food and service trades							
Cook	230	10.0	49.1	17.8	12.2	6.1	4.8
Hairdresser/Hairstylist	542	26.0	42.3	13.5	9.2	3.9	5.2
Baker	57	x	35.1	21.1	12.3	14.0	x
Other	33	x	39.4	21.2	x	x	x
Other trades							
Landscape gardener	93	x	39.8	22.6	18.3	8.6	x

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2

Distribution of 1992 new apprentices and completers, by age group and main trade, Alberta, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total completers	
	Years	Years	Number	Number	%
Total population			4,848	2,851	58.8
Age group					
15 to 19		5	539	377	69.9
20 to 24		5	1,685	1,037	61.5
25 to 29		5	1,083	615	56.8
30 to 39		5	1,222	660	54.0
40 or more		4	319	162	50.8
1992 Main trades					
Food and service trades					
Hairdresser/Hairstylist	2	3	542	424	78.2
Cook	3	4	230	111	48.3
Baker	3, 4	4	57	29	50.9
Other[1]		5	33	13	39.4
Electrical, electronics and related					
Construction electrician	4	6	518	299	57.7
Other		4	174	105	60.3
Building construction trades					
Carpenter	4	5	406	170	41.7
Insulator installer (heat and frost)	4	5	74	32	43.2
Cabinet maker	2, 4	5	64	27	42.2
Other		5	140	56	40.0
Metal fabricating trades					
Welder	3	4	388	258	66.5
Plumber/Gasfitter	4	5	275	161	58.5
Steamfitter/Pipefitter	4	5	112	56	50.0
Sheet metal worker	4	6	91	31	34.1
Machinist	4	5	63	37	58.7
Other		4	96	55	57.3
Motor vehicle and heavy equipment					
Automotive service technician	4	5	380	245	64.5
Heavy duty equipment mechanic technician	4	5	280	197	70.4
Motor vehicle body repairer (metal and paint)	3	5	144	73	50.7
Partsperson	3	4	110	68	61.8
Crane and hoist operator	1, 3	3	51	25	49.0
Other		3	62	50	80.6
Industrial and mechanical trades					
Industrial instrument mechanic and repair	4	4	219	113	51.6
Industrial mechanic (millwright)	4	5	153	119	77.8
Refrigeration and air conditioning mechanic	4	5	54	34	63.0
Other		4	37	27	73.0
Other trades					
Landscape gardener	4	5	93	36	38.7
Other			0	0	0.0

1. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2.1

Distribution of completers by characteristics of completion, by age group and main trade, Alberta, 1992-2002

		Characteristics of completion			
				Years taken to complete beyond expected duration	
	Total completers	Left after one completion with no interruption[1]	Others	1 year or less	2 years or more
	Number	%	%	%	%
Total population	2,851	83.9	16.1	65.7	34.3
Age group					
15 to 19	377	81.7	18.3	61.3	38.7
20 to 24	1,037	82.5	17.5	63.6	36.4
25 to 29	615	83.6	16.4	68.1	31.9
30 to 39	660	86.4	13.6	67.9	32.1
40 or more	162	89.5	10.5	71.6	28.4
1992 Main trades					
Food and service trades					
Hairdresser/Hairstylist	424	96.5	3.5	88.2	11.8
Cook	111	90.1	9.9	68.5	31.5
Baker	29	x	x	75.9	24.1
Other	13	100.0	0.0	x	x
Electrical, electronics and related					
Construction electrician	299	75.6	24.4	43.5	56.5
Other	105	88.6	11.4	85.7	14.3
Building construction trades					
Carpenter	170	87.6	12.4	59.4	40.6
Insulator installer (heat and frost)	32	71.9	28.1	56.3	43.8
Cabinet maker	27	77.8	22.2	55.6	44.4
Other	56	82.1	17.9	60.7	39.3
Metal fabricating trades					
Welder	258	86.0	14.0	63.2	36.8
Plumber/Gasfitter	161	72.0	28.0	50.9	49.1
Steamfitter/Pipefitter	56	75.0	25.0	62.5	37.5
Sheet metal worker	31	64.5	35.5	29.0	71.0
Machinist	37	x	x	73.0	27.0
Other	55	76.4	23.6	70.9	29.1
Motor vehicle and heavy equipment					
Automotive service technician	245	81.6	18.4	58.0	42.0
Heavy duty equipment mechanic technician	197	88.3	11.7	75.6	24.4
Motor vehicle body repairer (metal and paint)	73	75.3	24.7	47.9	52.1
Partsperson	68	88.2	11.8	63.2	36.8
Crane and hoist operator	25	x	x	72.0	28.0
Other	50	58.0	42.0	72.0	28.0
Industrial and mechanical trades					
Industrial instrument mechanic and repair	113	72.6	27.4	70.8	29.2
Industrial mechanic (millwright)	119	89.9	10.1	71.4	28.6
Refrigeration and air conditioning mechanic	34	79.4	20.6	52.9	47.1
Other	27	x	x	77.8	22.2
Other trades					
Landscape gardener	36	x	x	66.7	33.3
Other	0	0.0	0.0	0.0	0.0

1. Numbers include completions leading to a certificate granted to apprentices and also a few tradespersons.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 2.2

Distribution of 1992 new apprentices and completers, by trade[1] and duration of program, Alberta, 1992-2002

Program duration from institutions	Total 1992 registered	Total completers
	Number	%
Total population	4,848	58.8
1 year	21	61.9
Motor vehicle and heavy equipment		
Crane and hoist operator	21	61.9
2 years	612	76.6
Food and service trades		
Hairdresser/Hairstylist	542	78.2
Building construction trades		
Cabinet maker	x	x
Other	x	x
Motor vehicle and heavy equipment		
Other	45	80.0
3 years	1,168	56.4
Food and service trades		
Cook	230	48.3
Baker	57	50.9
Other	x	x
Metal fabricating trades		
Welder	388	66.5
Other	73	61.6
Motor vehicle and heavy equipment		
Motor vehicle body repairer (metal and paint)	144	50.7
Partsperson	110	61.8
Crane and hoist operator	30	40.0
Building construction trades		
Other	91	37.4
Industrial and mechanical trades		
Other	x	x
Electrical, electronics and related		
Other	28	64.3
4 years	3,055	56.1
Electrical, electronics and related		
Construction electrician	518	57.7
Other	146	59.6
Building construction trades		
Carpenter	408	41.7
Insulator installer (heat and frost)	74	43.2
Cabinet maker	61	42.6
Other	27	51.9
Motor vehicle and heavy equipment		
Automotive service technician	380	64.5
Heavy duty equipment mechanic technician	280	70.4
Other	17	82.4
Metal fabricating trades		
Plumber/Gasfitter	275	58.5
Steamfitter/Pipefitter	112	50.0
Sheet metal work	91	34.1
Machinist	63	58.7
Other	23	43.5

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Table 2.2 – Concluded

Distribution of 1992 new apprentices and completers, by trade[1] and duration of program, Alberta, 1992-2002

Program duration from institutions	Total 1992 registered	Total completers
	Number	%
4 years		
Industrial and mechanical trades		
Industrial mechanic (millwright)	153	77.8
Industrial instrument mechanic and repair	219	51.6
Refrigeration and air conditioning mechanic	54	63.0
Other	30	70.0
Food and service trades		
Other	31	41.9
Other trades		
Landscape gardener	93	38.7
5 years or more	0	0.0

1. A trade can have more than one program duration, given provincial duration.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 3

Distribution of 1992 new apprentices and dropouts[1], by age group and main trade, Alberta, 1992-2002

	Program duration from institutions	Median duration of time spent in program	Total 1992 registered	Total dropouts	
	Years	Years	Number	Number	%
Total population			4,848	2,255	46.5
Age group					
15 to 19		4	539	206	38.2
20 to 24		4	1,685	755	44.8
25 to 29		4	1,083	514	47.5
30 to 39		4	1,222	617	50.5
40 or more		4	319	163	51.1
1992 Main trades					
Food and service trades					
Hairdresser/Hairstylist	2	3	542	130	24.0
Cook	3	3.5	230	128	55.7
Baker	3, 4	4	57	29	50.9
Other[2]		4.5	33	20	60.6
Electrical, electronics and related					
Construction electrician	4	4	518	246	47.5
Other		4	174	75	43.1
Building construction trades					
Carpenter	4	4	408	254	62.3
Insulator installer (heat and frost)	4	4	74	50	67.6
Cabinet maker	2, 4	4	64	43	67.2
Other		3	140	90	64.3
Metal fabricating trades					
Welder	3	4	388	153	39.4
Plumber/Gasfitter	4	4	275	140	50.9
Steamfitter/Pipefitter	4	3	112	63	56.3
Sheet metal worker	4	4	91	68	74.7
Machinist	4	4	63	28	44.4
Other		4	96	50	52.1
Motor vehicle and heavy equipment					
Automotive service technician	4	4	380	162	42.6
Heavy duty equipment mechanic technician	4	4	280	94	33.6
Motor vehicle body repairer (metal and paint)	3	3	144	80	55.6
Partsperson	3	4	110	48	43.6
Crane and hoist operator	1, 3	3	51	29	56.9
Other		3.5	62	22	35.5
Industrial and mechanical trades					
Industrial instrument mechanic and repair	4	5	219	118	53.9
Industrial mechanic (millwright)	4	3	153	39	25.5
Refrigeration and air conditioning mechanic	4	4	54	25	46.3
Other		4.5	37	12	32.4
Other trades					
Landscape gardener	4	3	93	59	63.4
Other			0	0	0.0

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

***Source**: Statistics Canada, Registered Apprenticeship Information System*

Table 3.1

Distribution of dropouts[1] by their characteristics, by age group and main trade, Alberta, 1992-2002

	Total dropouts	Characteristics						
		Completers	Non-completers	One final interruption[2]	One temporary interruption[2]	Multiple interruptions[2]	Years taken to dropout beyond expected duration of completion: 1 year or less	Years taken to dropout beyond expected duration of completion: 2 years or more
	Number	%	%	%	%	%	%	%
Total population	2,255	12.8	87.2	78.0	13.0	9.0	68.2	31.8
Age group								
15 to 19	206	21.8	78.2	68.4	20.9	10.7	65.0	35.0
20 to 24	755	15.2	84.8	73.0	16.0	11.0	70.3	29.7
25 to 29	514	11.3	88.7	78.4	11.5	10.1	68.1	31.9
30 to 39	617	10.0	90.0	84.3	8.9	6.8	66.6	33.4
40 or more	163	4.9	95.1	88.3	x	x	69.3	30.7
1992 Main trades								
Food and service trades								
Hairdresser/Hairstylist	130	10.0	90.0	84.6	10.8	4.6	64.6	35.4
Cook	128	7.0	93.0	82.0	13.3	4.7	62.5	37.5
Baker	29	x	x	86.2	x	x	55.2	44.8
Other	20	0.0	100.0	100.0	0.0	0.0	60.0	40.0
Electrical, electronics and related								
Construction electrician	246	15.9	84.1	73.6	15.9	10.6	67.9	32.1
Other	75	8.0	92.0	80.0	9.3	10.7	64.0	36.0
Building construction trades								
Carpenter	254	6.7	93.3	83.1	10.2	6.7	71.7	28.3
Insulator installer (heat and frost)	50	16.0	84.0	70.0	16.0	14.0	72.0	28.0
Cabinet maker	43	14.0	86.0	79.1	x	x	67.4	32.6
Other	90	8.9	91.1	78.9	10.0	11.1	64.4	35.6
Metal fabricating trades								
Welder	153	15.0	85.0	77.1	11.1	11.8	66.0	34.0
Plumber/Gasfitter	140	22.9	77.1	69.3	18.6	12.1	78.6	21.4
Steamfitter/Pipefitter	63	14.3	85.7	73.0	12.7	14.3	66.7	33.3
Sheet metal worker	68	13.2	86.8	66.2	19.1	14.7	69.1	30.9
Machinist	28	x	x	78.6	x	x	64.3	35.7
Other	50	18.0	82.0	70.0	12.0	18.0	62.0	38.0
Motor vehicle and heavy equipment								
Automotive service technician	162	16.7	83.3	77.8	16.0	6.2	74.7	25.3
Heavy duty equipment mechanic technician	94	14.9	85.1	84.0	x	x	66.0	34.0
Motor vehicle body repairer (metal and paint)	80	11.3	88.8	67.5	15.0	17.5	73.8	26.3
Partsperson	48	12.5	87.5	81.3	x	x	77.1	22.9
Crane and hoist operator	29	x	x	86.2	x	x	62.1	37.9
Other	22	45.5	54.5	68.2	x	x	50.0	50.0

Table 3.1 – Concluded

Distribution of dropouts[1] by their characteristics, by age group and main trade, Alberta, 1992-2002

	Total dropouts	Characteristics						
		Completers	Non-completers	One final interruption[2]	One temporary interruption[2]	Multiple interruptions[2]	Years taken to dropout beyond expected duration of completion: 1 year or less	Years taken to dropout beyond expected duration of completion: 2 years or more
	Number	%	%	%	%	%	%	%
Industrial and mechanical trades								
Industrial instrument mechanic and repair	118	11.0	89.0	82.2	11.9	5.9	53.4	46.6
Industrial mechanic (millwright)	39	x	x	82.1	x	x	76.9	23.1
Refrigeration and air conditioning mechanic	25	x	x	72.0	x	x	72.0	28.0
Other	12	x	x	50.0	x	x	x	x
Other trades								
Landscape gardener	59	x	x	89.8	x	x	84.7	15.3
Other	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back). Dropouts can also be completers or continuers.
2. Interruptions do not include time away after completing and before studying a new trade.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 3.2

Distribution of 1992 new apprentices and dropouts[1], by duration of program, Alberta, 1992-2002

	Total 1992 registered	Total dropouts
	Number	%
Total population	4,848	46.5
Progam duration from institutions		
1 year	21	47.6
2 years	612	27.1
3 years	1,160	48.7
4 years	3,055	49.6
5 years or more	0	0.0

1. Dropouts include Stayouts (not coming back) and Stopouts (coming back).

Source: *Statistics Canada, Registered Apprenticeship Information System.*

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Table 4

Distribution of 1992 new apprentices and 2002 continuers, by age group and main trade, Alberta

	Total 1992 registered	2002 continuers
	Number	%
Total population	4,848	5.3
Age group		
15 to 19	539	6.3
20 to 24	1,685	5.9
25 to 29	1,083	5.6
30 to 39	1,222	3.7
40 or more	319	5.6
1992 Main trades		
Food and service trades		
Hairdresser/Hairstylist	542	1.1
Cook	230	5.2
Other	90	x
Electrical, electronics and related		
Construction electrician	518	12.2
Other	174	4.0
Building construction trades		
Carpenter	408	4.2
Other	278	3.6
Metal fabricating trades		
Welder	388	4.6
Plumber/Gasfitter	275	8.4
Steamfitter/Pipefitter	112	8.0
Other	250	6.8
Motor vehicle and heavy equipment		
Automotive service technician	380	2.4
Heavy duty equipment mechanic technician	280	3.9
Motor vehicle body repairer (metal and paint)	144	8.3
Other	223	4.0
Industrial and mechanical trades		
Industrial instrument mechanic and repair	219	7.8
Industrial mechanic (millwright)	153	4.6
Other	91	6.6
Other trades		
Other	93	x

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 4.1

Distribution of 2002 continuers by their characteristics, by age group and main trade, Alberta

		Characteristics		
	2002 continuers	Without a previous completion	Same trade	Without a previous interruption[1]
	Number	%	%	%
Total population	257	59.5	35.8	44.7
Age group				
15 to 19	34	47.1	20.6	47.1
20 to 24	99	58.6	35.4	42.4
25 to 29	61	62.3	42.6	50.8
30 to 39	45	66.7	35.6	40.0
40 or more	18	61.1	44.4	44.4
1992 Main trades				
Food and service trades				
Hairdresser/Hairstylist	6	x	x	x
Cook	12	x	0.0	x
Other	x	x	x	x
Electrical, electronics and related				
Construction electrician	63	55.6	46.0	57.1
Other	7	x	x	x
Building construction trades				
Carpenter	17	x	47.1	x
Other	10	x	x	x
Metal fabricating trades				
Welder	18	50.0	44.4	33.3
Plumber/Gasfitter	23	73.9	30.4	39.1
Steamfitter/Pipefitter	9	x	x	x
Other	17	x	52.9	35.3
Motor vehicle and heavy equipment				
Automotive service technician	9	x	x	x
Heavy duty equipment mechanic technician	11	x	x	x
Motor vehicle body repairer (metal and paint)	12	x	x	50.0
Other	9	x	0.0	x
Industrial and mechanical trades				
Industrial instrument mechanic and repair	17	41.2	x	58.8
Industrial mechanic (millwright)	7	x	x	x
Other	6	x	0.0	x
Other trades				
Other	x	x	x	x

1. Interruptions do not include time away after completing and before studying a new trade.

x Data not available.

Source: *Statistics Canada, Registered Apprenticeship Information System*

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Table 5

Distribution of 1992 new apprentices and certified apprentices[1] and tradespersons, by age group and main trade, Alberta, 1992-2002

	Program duration from institutions	Total 1992 registered	Certified apprentices and tradespersons
	Years	Number	%
Total population		4,848	59.1
Age group			
15 to 19		539	69.9
20 to 24		1,685	61.8
25 to 29		1,083	57.2
30 to 39		1,222	54.3
40 or more		319	51.4
1992 Main trades			
Food and service trades			
Hairdresser/Hairstylist	2	542	79.3
Cook	3	230	48.3
Baker	3, 4	57	50.9
Other[2]		33	39.4
Electrical, electronics and related			
Construction electrician	4	518	57.7
Other		174	60.9
Building construction trades			
Carpenter	4	408	41.7
Insulator installer (heat and frost)	4	74	43.2
Cabinet maker	2, 4	64	42.2
Other		140	40.7
Metal fabricating trades			
Welder	3	388	66.8
Plumber/Gasfitter	4	275	58.5
Steamfitter/Pipefitter	4	112	50.9
Sheet metal worker	4	91	34.1
Machinist	4	63	58.7
Other		96	58.3
Motor vehicle and heavy equipment			
Automotive service technician	4	380	64.7
Heavy duty equipment mechanic technician	4	280	71.1
Motor vehicle body repairer (metal and paint)	3	144	52.1
Partsperson	3	110	61.8
Crane and hoist operator	1, 3	51	49.0
Other		62	80.6
Industrial and mechanical trades			
Industrial instrument mechanic and repair	4	219	51.6
Industrial mechanic (millwright)	4	153	77.1
Refrigeration and air conditioning mechanic	4	54	63.0
Other		37	73.0
Other trades			
Landscape gardener	4	93	38.7
Other		0	0.0

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. All categories 'Other' include different trades with various program durations. Program durations are not listed since they could not be associated with a specific trade.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Table 5.1

Distribution of certified apprentices[1] and tradespersons by duration for certification, by age group and main trade, Alberta, 1992-2002

		Duration for certification			
	Certified apprentices and tradespersons	1 to 3 years (1992-1994)	4 to 6 years (1995-1997)	7 years or more (1998-2002)	Total trades-person[2]
	Number	%	%	%	%
Total population	2,866	26.7	60.0	12.7	0.6
Age group					
15 to 19	377	32.1	50.9	x	x
20 to 24	1,042	28.3	56.4	x	x
25 to 29	619	25.4	64.1	x	x
30 to 39	664	22.3	65.4	x	x
40 or more	164	26.2	67.1	x	x
1992 Main trades					
Food and service trades					
Hairdresser/Hairstylist	430	87.0	10.9	x	x
Cook	111	43.2	48.6	8.1	0.0
Baker	29	37.9	55.2	x	x
Other	13	x	76.9	x	0.0
Electrical, electronics and related					
Construction electrician	299	2.7	70.2	27.1	0.0
Other	106	26.4	67.9	x	x
Building construction trades					
Carpenter	170	x	75.3	21.2	x
Insulator installer (heat and frost)	32	x	65.6	25.0	x
Cabinet maker	27	x	81.5	x	0.0
Other	57	21.1	70.2	x	x
Metal fabricating trades					
Welder	259	23.9	64.9	x	x
Plumber/Gasfitter	161	x	77.0	20.5	x
Steamfitter/Pipefitter	57	x	70.2	15.8	x
Sheet metal worker	31	x	54.8	41.9	x
Machinist	37	x	83.8	x	0.0
Other	56	37.5	48.2	x	x
Motor vehicle and heavy equipment					
Automotive service technician	246	x	74.4	15.4	x
Heavy duty equipment mechanic technician	199	14.6	73.9	x	x
Motor vehicle body repairer (metal and paint)	75	14.7	69.3	16.0	0.0
Partsperson	68	25.0	66.2	x	x
Crane and hoist operator	25	68.0	32.0	0.0	0.0
Other	50	58.0	40.0	x	x
Industrial and mechanical trades					
Industrial instrument mechanic and repair	113	32.7	56.6	10.6	0.0
Industrial mechanic (millwright)	118	x	86.4	9.3	x
Refrigeration and air conditioning mechanic	34	x	70.6	23.5	x
Other	27	x	70.4	x	0.0
Other trades					
Landscape gardener	36	0.0	83.3	16.7	0.0
Other	0	0.0	0.0	0.0	0.0

1. Even if most apprentices certified in their 1992 trade, a few apprentices received certification in a different trade.
2. Tradespersons are individuals who started as new apprentices in 1992, did not complete their apprenticeship program and obtained certification afterwards.

x Data not available.

Source: Statistics Canada, Registered Apprenticeship Information System.

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Table 6

Longitudinal distribution of 1992 new apprentices learning status at the end of each year, Alberta, 1992-2002

		Total	Alberta	
	Years	Number	Number	%
Registered apprentices		14,094	4,848	34.4
Total learning status in 2002[1]		16,239	5,662	34.9
Continuation status				
	1992	13,344	4,752	98.0
	1993	11,984	4,115	84.9
	1994	10,191	3,094	63.8
	1995	7,977	2,273	46.9
	1996	5,789	1,414	29.2
	1997	3,824	816	16.8
	1998	2,868	522	10.8
	1999	2,134	380	7.8
	2000	1,763	310	6.4
	2001	1,552	284	5.9
	2002	1,307	257	5.3
Cumulative total of discontinuations[2]				
	1992	714	96	3.9
	1993	1,594	460	18.7
	1994	2,845	1,084	44.0
	1995	3,677	1,440	58.4
	1996	4,402	1,670	67.7
	1997	5,584	1,927	78.1
	1998	6,250	2,116	85.8
	1999	6,844	2,257	91.5
	2000	7,206	2,359	95.7
	2001	7,415	2,411	97.8
	2002	7,575	2,466	100.0
Cumulative total of completions[2]				
	1992	36	0	0.0
	1993	603	297	10.1
	1994	1,757	764	26.0
	1995	3,382	1,327	45.2
	1996	5,042	2,063	70.2
	1997	6,011	2,506	85.3
	1998	6,517	2,696	91.7
	1999	6,818	2,784	94.7
	2000	7,005	2,841	96.7
	2001	7,162	2,896	98.5
	2002	7,357	2,939	100.0
Cumulative total of certifications[2]				
	1992	39	0	0.0
	1993	545	301	10.2
	1994	1,719	768	26.0
	1995	3,371	1,330	44.9
	1996	5,081	2,073	70.1
	1997	6,101	2,516	85.0
	1998	6,645	2,706	91.4
	1999	6,988	2,799	94.6
	2000	7,227	2,859	96.6
	2001	7,435	2,913	98.4
	2002	7,665	2,959	100.0

1. This total represents the sum of learning statuses related to the completion of a program. Certifications are excluded not to duplicate completion figures.
2. Apprentices can drop out more than once or have more than one completion or certification.

Source: *Statistics Canada, Registered Apprenticeship Information System.*

Appendix 3

Completion Indicators

Definitions

Indicators could be grouped in two broad families: performance indicators and population-based indicators. The first family of indicators measures the outcome of a population, such as completion. These outcomes assess the performance of a (educational) system, based on performance objectives set by this system. The second family describes the prevalence of certain characteristics (e.g. educational attainment) within a population.

This section focuses mostly on performance indicators for two main reasons:

1. The nature of apprenticeship programs as described above, limits any age-based indicator. Population-based indicators most often assume either an age for completion, or an age for the reference population.[36]
2. The current need is first to measure the 'success rate' of the apprentice population.

To calculate a performance indicator which gives an aggregate rate, a numerator and a denominator are required. Usually, the numerator is easily identified. One of the difficulties in calculating an aggregate ratio, such as a completion rate, is to determine the population for the ratio's denominator.

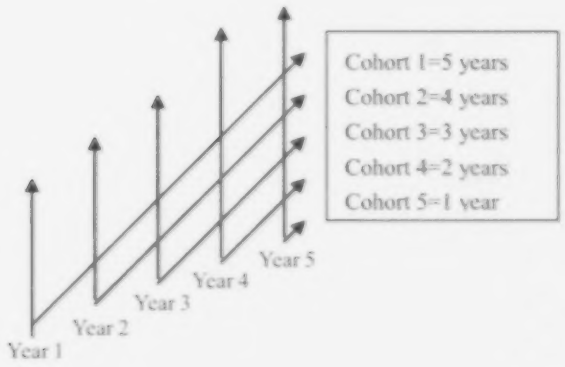
The choice of a denominator can have a large impact on the ratio's value. For example, a completion rate could be calculated by dividing the number of completers in a specific year in a specific program, by the number of persons registered in that same year and program, at the national level only. That same ratio would be different if calculated for each province. This ratio could also be expressed with yet another denominator to give a percentage of the total number of people still registered in a program. Thus, if basic variables such as the program, the year of registration or completion, or the province are considered for the denominator either alone, simultaneously or not at all, the ratio will change.

The denominator can be at one extreme, the maximum population of potential completers in a given year is the total of all registered apprentices. At the other extreme, the minimum population of potential completers is a specific percentage of each previous cohort who could complete that year, based on a probability of completion given the length of stay in the program.

Populations defined between these two extremes make the calculation of a completion more practical. The optimal approach is to choose a denominator that represents the *potential* population for completion as closely as possible; not more, not less.

Nine aggregate performance indicators are presented in the following section with varying degrees of inclusions in the denominator. Besides the denominator, two other characteristics can be used to differentiate them:

1. Crude versus synthetic rate: a crude rate describes a situation using raw numbers (see diagonal arrows) while a synthetic rate transforms existing numbers to a secondary level (vertical arrows). The interpretation of a crude rate is more intuitive but is often subject to variations in the environment which limits comparison over time.[37]

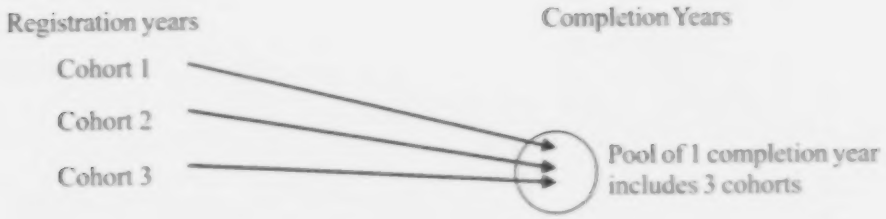


2. Cohort versus pool approach: the denominator represents either a cohort registered at one point in time or a pool of apprentices registered over a period of time. The analysis of completion is done either by following individuals who started during the same year (cohort) or by looking at a pool of individuals coming from various cohorts who could all be potential completers (pool). The following diagram illustrates these two methods for covering three years of completions: one looks at cohort 1 completing over three years; the other one looks at all completers in a year coming from three different cohorts.

By Cohort

Cohort 1 has three years of completion.

By Pool



The following section describes a summary of the methodology of nine indicators with their strengths and weaknesses.

Summary

To facilitate the comparison between indicators, a short summary table presents these basic characteristics:

Crude or Synthetic Rate
Expected or Potential Population
Cohort or Pool

A set of hypothetical data is used to demonstrate how each indicator is calculated. Since the current study has information for only one cohort, new hypothetical data has been created for methodologies using a pool approach. It allows for a comparison of all methodologies using the same information. Each indicator value is presented in a small box:

Indicator value: 10%

Indicators 1 to 4: Raw Completion Indicators (RCI)

Raw Rate
Potential Population
Pool

Indicator value: 10% to 21%

These first four indicators measure the stability of programs at the beginning or the end of the current year by showing a ratio of total completers in a current year to a varying definition of registered apprentices. For example, if this ratio increases from one year to another it means either that there are fewer people registering and/or more people graduating.

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Strengths	Weaknesses
Easy to use. Doesn't require individual level of data.	It is an aggregate rate. It underestimates reality since the denominator has been inflated with i) apprentices who could not complete during that year (previous years' completers) and ii) those who registered this year and are not likely to complete within the same year. It requires stable size of cohorts in order to compare across years. The numerator includes early and late completers. Hence, it does not give an accurate measure of performance.

Indicators 5 and 6: Cohort's Completion Indicators (CCI)

Raw Rate
Potential Population
Cohort

Indicator values:
28 (annual)
51 (cumulative)

These indicators measure the current year's completion rate for apprentices who started at the same time. They should be calculated by programs of different lengths. They can also be cumulative by including all apprentices who started in a specific year and completed *by* the current year. A cohort should include all transfers. Experience credited should be taken into account.

Strengths	Weaknesses
Easy to use. Easier to define a potential population of completers who can indeed complete. It keeps each cohort separate which allows for comparison between cohorts to understand the effect of an economic cycle on a cohort.	This approach provides a range of possible completion rates given the relative sizes of each cohort. Indicator values need to be interpreted within the context of the cohort being measured. The rate may fluctuate with the size of the cohort. For example a larger cohort may have a higher proportion of dropouts. The reasons for a larger or smaller cohort should be examined to explain varying completion rates.

Indicator 7: Indicator of Reached Potential (IRP)

Synthetic Rate
Expected Population
Pseudo-Cohort

Indicator value: 71

This indicator is calculated based on the real number of completers in a year given an expected number of completers for that year. It is a ratio of two populations of completers, but not a completion rate. If the rate goes up it is either because the real number of completers has increased and/or because the expected number has decreased. The rate can be higher than 100. This indicator would help to evaluate the gap between the program's target and reality.

Strengths	Weaknesses
The measure of the expected population is solid. It is based on previous annual up-to-date information on completers. Years with no completers are removed.	It is not a proportion; the numerator is not included in the denominator. The interpretation of a ratio higher than 100 could be challenging. For uninformed users it could be misleading since it will provide higher values than other available indicators. It requires more data manipulation for its calculation.

Indicator 8: The Overall Completion Indicator (OCI)

Synthetic Rate Potential Population Pseudo-Cohort or cohort	Indicator value: 59%

This indicator gives a completion rate at any point in time (for any number of years in the program). It also provides the average duration it would take to complete a program for apprentices starting *next year*. It can also be used when following a cohort. Its variation indicates a true overall comparable increase or decrease of completers over time.

Strengths	Weaknesses
It removes the effect of the relative size of a cohort. It can be used as a comparison tool over time. It is stable and reliable. It provides two different measures.	It is less intuitive to use and requires more steps to calculate. It is still an aggregate figure and will never be as precise as using individual data.

Indicator 9: Cumulative Cohort-based Completion Indicator (CCCI)

Synthetic Rate Potential Population Pseudo-Cohort	Indicator value: 53%

This indicator measures the current year's completion rate for all apprentices considering the relative importance the current year's completers have within their original cohort (when they registered). This indicator doesn't allow for a cohort-based analysis since all the cohorts of completers are considered in the denominator.

Strengths	Weaknesses
Over time, this indicator includes a certain number of years for the calculation of its denominator. This helps to spread the impact over time of cohorts that would be out of range. It is relatively easy to use within the family of synthetic rate.	Even if the impact of out-of-range cohorts is spread over time, thus minimizing abrupt changes from one year to another, it does not completely remove their impact. It requires keeping information at the cohort level to combine cohorts based on their relative importance.

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Performance-based indicators: Detailed discussion

Indicators 1 to 4: Raw Completion Indicators (RCI)

Raw Rate
Potential Population
Pool

The four first raw indicators can be calculated with aggregate data. They would however increase in quality using individual level information to ensure that individuals in the numerator are included in the denominator.

The denominator differentiates these four indicators.

i) It measures the population of registered at the beginning or the end of a year, thus adding the current year's registered, or

ii) it keeps or not dropouts and completers from years prior to completion. Dropouts that quit for unwanted reasons (death, jail, etc) should be removed. It is recommended to keep dropouts who leave for other reasons (financial, lack of fit, family, job, etc.) since the behaviour of these apprentices is part of the story that is being measured. (*National Institute of Statistical Sciences*, p.12).

The following table presents the various combinations of populations in the denominator.

Populations used in various denominators

	Years prior to completion			Year of completion		
Populations	Registered	Dropout	Completer	Registered	Dropout	Completer
All; start of a year	included	included	included	excluded	excluded	excluded
All; end of a year	included	included	included	included	included	included
Continuers only; start of a year	included	excluded	excluded	excluded	excluded	excluded
Continuers only; end of a year	included	excluded	excluded	included	excluded	included

1. Raw Completion Indicator (RCI_1): at the start of the year, with all registered

Indicator value: 17%

$$RCI_1 = \frac{Completers\ current\ year}{Cumulative\ registered\ at\ start\ of\ current\ year}$$

Current year= year of completion

This ratio looks at the completion rate at the beginning of a year. The ratio gives one of the lowest rates since its denominator includes anyone registered, those who are taking a long time to complete and those who have been registered for a period shorter than the duration of the program. The ratio can never be equal to 100% unless the program lasts one year with no dropouts or delayers. The longer

the program, the more years of registered apprentices will be included in the denominator. Special attention should be given to apprentices transferring from one program to another so that they are counted only once in the final program.

2. Raw Completion Indicator (RCI_2): at the end of the year, with all registered

Indicator value: 10%

$$RCI_2 = \frac{Completers\ current\ year}{Cumulative\ registered\ at\ end\ of\ current\ year}$$

This ratio looks at the completion rate at the end of a year. It ratio is the lowest of all rates since not only it has the same issues as the first one but it increases the denominator by including new registered in the current year, which are the least likely to complete within the same year. A special attention should be given to apprentices transferring from one program to another so that they are counted only once in the final program.

3. Raw Completion Indicator (RCI_3): at the start of the year, with continuers

Indicator value: 22%

$$RCI_3 = \frac{Completers\ current\ year}{(Cumulative\ registered - discontinuers - completers)\ at\ start\ of\ current\ year}$$

This ratio looks at the completion rate at the start of a year. It removes completers and dropouts from previous years. The current year's completers are included in the denominator in the number of registered within the past three years.

4. Raw Completion Indicator (RCI_4): at the end of the year, with continuers

Indicator value: 12%

$$RCI_4 = \frac{Graduates\ current\ year}{(Cumulative\ registered - discontinuers)\ at\ end\ of\ current\ year - graduates\ at\ start\ of\ current\ year}$$

This ratio looks at the completion rate at the end of the current year, thus removing people who left during the current and previous years. Apprentices completing in the current year are kept. The result of this ratio is lower that the previous one because the current year's cohort adds a value in the denominator much larger than the number of dropouts removed within that same year.

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Indicators 5 and 6: Cohort's Completion Indicators (CCI)

Raw Rate
Potential Population
Cohort

These two indicators can also be calculated with aggregate data. Since they use a cohort as a reference population, it is recommended to use individual level of information to ensure that apprentices at the numerator are included in the denominator and to avoid double counting.

5. Annual Cohort's Completion Indicator (ACCI)

Indicator value: 28%

These completers are apprentices who registered in the same year. They are compared with the total population who registered when they started their training program.

$$\text{ACCI} = \frac{Completers\ in\ Year_t\ from\ Cohort_{t-x}}{registered_{t-x}}$$

x = duration of the program

t = current year

This approach should be done by trade and jurisdiction to reflect the variation of the program duration. The interpretation of this indicator is valid for a specific cohort over time. However the comparison between cohorts must be done carefully since various socio-economic factors can influence cohorts differently over time. This maximum value of this ratio is 100% completion rate assuming no dropouts or transfers. It is recommended, however, to consider dropouts or transfers.

For an annual rate, apprentices from cohort t-x who have completed before or after the year t are excluded. Dropouts are included. Apprentices who completed in the current year but do not belong in the studied cohort are not included in the numerator.

If the current year corresponds to the expected duration of a program, this rate can monitor from one cohort to another the proportion of people completing within the time frame. However, this interpretation has some limitations. One cannot assume that completion varies proportionally to registration volume. Socio-economic factors can influence either registration, dropping out or completion. Thus, the ratio of any of these numbers may vary in a way that may limit comparison between cohorts.

Taking transfers into account

This previous ratio could be modified to include apprentices who transferred from other programs. If they have been credited time for their acquired learning they may be finishing at the same time as the cohort *t-x*. This equivalence between programs or jurisdictions allows apprentices to complete in a shorter period of time. It is a way to 'subsidize' the original cohort. The formula would then become:

$$\text{ACCI}_{\text{with transfers}} = \frac{\textit{Completers in Year}_{t}\ \textit{from Cohort}_{t-x}}{\textit{registered}_{(t-x)} + \textit{registered}_{(t-x+1)} + \ldots + \textit{registered}_{(t-1)}}$$

x = duration of the program

t = current year

The value given to x, that is the duration of the program, determines the selected population. This duration can be either the official duration or an average duration that reflects time usually taken to complete a training program. Accounting for transfers could affect the indicator.

6. Cumulative Cohort's Completion Indicator (CCCI)

Indicator value: 51%

This approach allows the comparison of the performance of any cohort over time. It also allows the monitoring of cohorts' performance over comparable periods of time. It includes all apprentices from a single cohort who have completed by the current year.

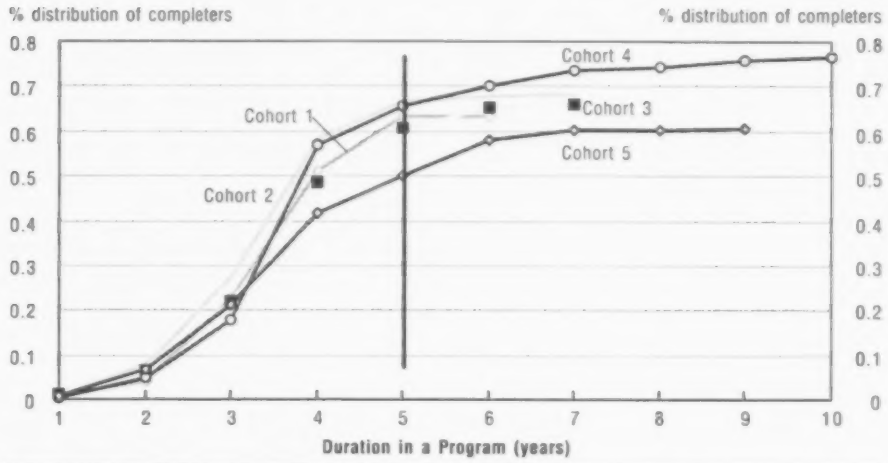
$$\text{CCCI} = \frac{\textit{Cumulative Completers by a Year}_{t}\ \textit{from Cohort}_{t-x}}{\textit{registered}_{t-x}}$$

x = duration of the program

t = current year

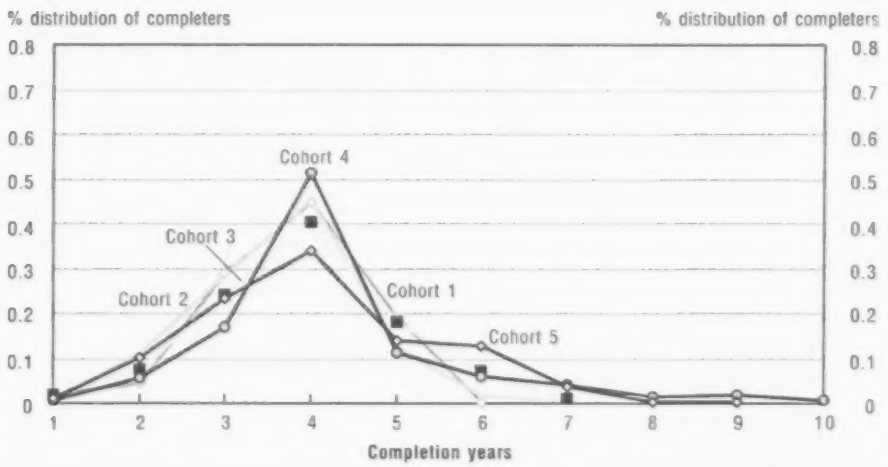
The following figure provides information about the relative performance of each cohort. It is using hypothetical data to allow for comparison with other indicators. It is obtained by applying the above formula. From this graph, one can say that Cohort 2 did better than other cohorts until the 5th year.

Figure 1
Comparison in time of cumulative percentage of completers by cohort



Finally the last graph provides the same information in terms of the distribution of completers by cohort for each year in the program. It shows that a peak is reached after four years, which is the expected duration of the program. It also indicates that even if the Cohort 4 was a bit behind other cohorts during the first few years, it has actually provided a larger proportion of completers for the fourth year in comparison with other cohorts.

Figure 2
Comparison in time of annual distribution of completers by cohort



Taking transfers into account

The above ratio could be modified to include apprentices that have been transferred from other programs and have been credited for the learning already accomplished. The formula would then be, for a 4-year program with completion year in 2004:

$$CCCI_{\text{with transfers}} = \frac{Cumulative\ Completers\ by\ Year_t\ from\ Cohort_{(t-x)}}{registered_{(t-x)} + registered_{(t-x+1)} + \ldots + registered_{(t-1)}}$$

x = duration of the program

t = current year

Since the numerator cumulates all completers from a starting cohort, only one indicator is necessary to measure the completion of a cohort.

Indicators presented so far use raw observed data. They are somewhat limited since they do not take into account the structure of each cohort. Each cohort can vary in size, as a consequence of socio-economic factors (program marketing, labour market, etc.). The denominator can vary following the volume of each cohort. Consequently, this ratio does not consider the fact that the probability of graduating varies from one year to the other.

Indicator 7: Indicator of Reached Potential (IRP)

Synthetic Rate
Expected Population
Pseudo-Cohort

Indicator value: 71

This ratio artificially decreases the denominator by reducing the potential number of people to those who should complete at some point in time. The expected population is smaller than the potential population. It is a ratio reality/expectation that can be higher than 100.

The expected population of completers can be estimated by an average of completers in a program for a specific duration. The average limits the impact of a cohort size. For example, let's choose a 4-year program. People take different durations to complete it. Every year provides completers who took 1, 2, 3, 4 years or more to finish. Thus, percentages across years for the same duration for completion can be averaged. The number of years chosen for the average could either be the real number of years it takes to complete or the official duration. The number of years for the average should be specific to trades and jurisdictions. If completers of different programs are aggregated in the numerator, this ratio must be used for programs with the same duration.

$$IRP = \frac{G_0}{\sum_{y=0}^{n} P_{0-y} \times R_{0-y}}$$

y = year, varies from 0 to n; 0 is the completion year; 0 - n are all registration years.
G_0 = number of completers at Year 0.
P_{0-y} = expected percentage of completers for years 0 to n.
R_{0-y} = number of registered for years 0 to n.

The number of years should be large enough to give a good representation of the distribution of completers over time and could easily be updated year after year[38].

If historical data are available and relevant to the current socio-economic conditions, no average would be calculated. *P* would reflect the observed proportion of completers by duration. In any given year, the cohort expected to complete in the denominator would be the sum of a determined percentage of apprentices from previous registration years. In practice, it would be difficult to estimate the percentage distribution in a reliable manner, by trade, by jurisdiction, over time. It requires a lot of historical information and data to re-evaluate estimates of the population distribution over time.

Indicator 8: The Overall Completion Indicator (OCI)

Synthetic Rate
Potential Population
Pseudo-Cohort or cohort

Indicator value: 59%

The OCI is a completion rate for any given year. Its value represents the proportion of registered individuals entering a program in the following year and who would complete after x number of years. It is assumed that these individuals behave in a similar manner as those observed this current year among all registered individuals, no matter from which cohort they come. The advantage of the OCI is that it can be used for comparison purposes year after year regardless of the structure of the registered population at the beginning of a year.

With raw rates, it is difficult to evaluate programs across years. As such, one would think that a rate of 2,000 completers over 10,000 enrolled would be a better performance than 1,000 completers over the same number of enrolled apprentices.

This conclusion could be erroneous. The 10,000 enrolled apprentices have started at different points in time. If evaluating a 4-year program after 4 years, it may be that a larger number of apprentices who started 4 years ago produced more completers four years later. The proportion of the cohort would be larger among all 10,000 apprentices. So even if the number of completers doubled, it is only because more people registered 4 years earlier to a 4-year program, not because the program is better performing. The program may have done well in recruiting, but not necessarily in producing more completers. The interpretation should not be that programs have succeeded in doubling the number of apprentices who completed from 1,000 to 2,000.

The OCI neutralizes the relative cohort weight. The first step is to calculate cohort specific rates (CSR). Except for the current year, the denominator is the number of individuals still registered at the beginning of the year, i.e. the continuers exposed to the possibility of graduating at the beginning of the year.[39] The example below shows the CSRs for 2004 making the hypothesis that no one at the beginning of the year is from a cohort of registered individuals prior to 2000.

$$CSR_{2004} = \frac{\text{Completers 2004 from 2004 cohort}}{\text{Registered in 2004}}$$

$$CSR_{2003} = \frac{\text{Completers 2004 from 2003 cohort}}{\text{2004 Continuers from the 2003 cohort}}$$

$$CSR_{2002} = \frac{\text{Completers 2004 from 2002 cohort}}{\text{2004 Continuers from the 2002 cohort}}$$

$$CSR_{2001} = \frac{\text{Completers 2004 from 2001 cohort}}{\text{2004 Continuers from the 2001 cohort}}$$

$$CSR_{2000} = \frac{\text{Completers 2004 from 2000 cohort}}{\text{2004 Continuers from the 2000 cohort}}$$

CSR_{2004} refers to those having completed during their first year in the program, CSR_{2003} refers to those having completed during their second year in the program, etc. Let us assume that $CSR_{2004} = 0.05$, $CSR_{2003} = 0.10$, $CSR_{2002} = 0.15$, $CSR_{2001} = 0.30$ and $CSR_{2000} = 0.20$. It is expected that over time, the cohort will slowly become exhausted, given completers and dropouts leaving the program.

To compute an OCI, the first requirement is to create a synthetic cohort, typically fixed empirically at 10,000 individuals. After one year in the program, this synthetic cohort would have 500 completers (10,000 X 0.05). To start the second year there would then be 9,500 continuers left in this cohort (10,000 – 500). After the second year, 950 individuals will complete (9,500 X 0.10). The same calculation is used for all years.

Calculation of overall completion rate

Year	Registered/Continuers	CSR	Completed
1	10,000	0.05	500
2	9,500	0.10	950
3	8,550	0.15	1,283
4	7,267	0.30	2,180
5	5,087	0.20	1,017
6	4,070		

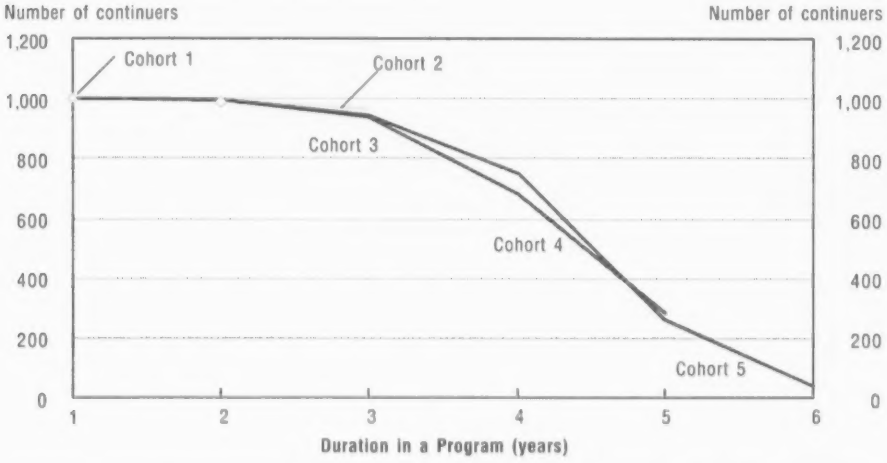
Source: *Registered Apprenticeship Information System.*

The number of individuals still registered at the end of the 6th year is 4,070 from the 10,000, and indicates that 5,930 completed, thus 59.3% after 5 years in the program. This percentage means that if a new cohort starting in 2005 would go through their program with the same probability of completing every year, there would be 59% of them completing after 5 years in the program.

By continuing this process, it is expected that fewer and fewer continuers will be left over time, as is illustrated in the following figure:

Figure 3

Decrease of continuers over the duration of a program, by cohort

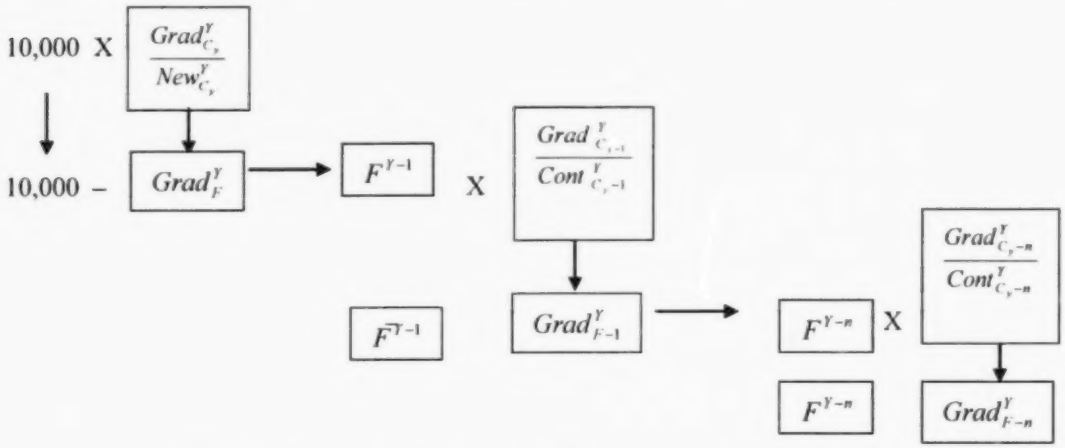


This method can also be used to calculate the average number of years it takes to complete for those who do complete from the synthetic cohort, by simply adding the number of years that each completer has spent in the program. From the above table, 500 completed after Year 1 (500 X 1 = 500 person-year), and 950 after year 2 (950 X 2 = 1,900 person-year), etc. The total is:

(500 X 1) + (950 X 2) + (1,283 X 3) + (2,180 X 4) + (1,017 X 5) = 20,054 person-year

This total represents the number of years spent within the program for the 5,930 individuals who completed from this synthetic cohort. The average number of years in the program for those who completed would then be: 20,054 / 5,930 = 3.4 years.

The previous calculations can be represented in a formula as follows:



Y= year; it starts at current year and counts down to Y-*n*, where *n* is the number of years needed to exhaust a cohort.

$Grad^{Y}_{C_{y-1}}$ = End of the Year Completers for Cohort C_y

$Cont^{Y}_{C_y-n}$ = Beginning of the year Continuers for Cohort C_y

$Grad^{Y}_{F-n}$ = Current year's completers for Cohort F

F^{Y-n} = Beginning of the year's continuers for Cohort F

Note: It may be possible to have a ratio $\frac{Grad}{Cont}$)1 ; in this case, it would be for the last cohorts with only a few continuers and completers left.

The formula to calculate the expected duration can be read as:

$$\text{Number of years to complete} = \frac{\sum_{t=1}^{n} Grad^{Y}_{F-n} \times t}{F^{Y} - F^{Y-n}}$$

t = number of years taken for completion

Indicator 9: Cohort Proportion Completion Indicator (CPCI)

Synthetic Rate
Potential Population
Pseudo-Cohort

Indicator value: 53

This indicator is a sum of ratios, each ratio being the number of completers in a given year originating from a specific cohort divided by registered apprentices of that cohort. There are as many ratios as registration years providing completers.

Cohorts are used to limit their relative importance in relationship with others. *This synthetic index describes the total population of completers in a given year, not the population of completers for various cohorts.* Each cohort also has a history of completion over time.

To calculate the completion rate for a specific year, one must consider that completers are originating from different cohorts. Even some people having registered at the beginning of that completion year could possibly complete during that same year.

Each ratio takes the number of completers from one cohort (or a registration year) and divides it by the number of registered in that cohort. When ratios from all cohorts are added, the numerator describes all completers of the year, and the denominator describes the originating cohorts that provided these completers. Only cohorts that provided completers are considered in the sum of ratios.

This approach however does not account for dropouts, since it refers to the registered population. This indicator measures the performance of a completion year, which in some sense is artificial, since these completers come from various "registration cohorts".

$$\text{CPCI} = \sum_{n=0}^{y} \frac{Grad_{y-n}^{y}}{R_{y-n}}$$

The duration or length of stay in the program is not directly considered in this indicator. However, it is indirectly measured since the population of completers in the numerator is a reflection of the length of stay.

Population-based Completion Indicator (PCI)

Raw Rate
Potential Population
Pool

This indicator is commonly used to calculate a completion rate for postsecondary diplomas (college and university):

$$\text{PCI} = \frac{\textit{Completers of current year}}{\textit{Population with usual age at graduation}}$$

The expected age for each grade is: College studies: 21 years old; Bachelor: 22 years old; Master: 24 years old; Doctorate: 27 years old. These completion ages are currently under revisions. The reference population can be either from the jurisdiction of residence or the jurisdiction of schooling. This approach would not be applicable for Apprentices population given its wide variation of ages.

Endnotes

1. Over the period of study, the same apprentice can be a completer, a dropout and a continuer. For this reason, percentages do not add to 100%.
2. Knowledge matters: Skills and Learning for Canadians, Human Resources Development Canada, 2002.
3. Knowledge matters: Skills and Learning for Canadians, Human Resources Development Canada, 2002.
4. In this text, the term 'journeyperson' means tradesperson with a certificate. A tradesperson does not necessarily have a certificate.
5. Daily November 20th, 2003, Registered apprenticeship training programs, 2002.
6. Catching Up Falling Behind: the performance of Provincial GDP per capita from 1990 to 2003, no.24 (11F0027M1E2004024).
7. It is also important to note that these numbers describe tradespersons as reported in the Labour Force Survey. It does not imply that these individuals would have obtained an apprenticeship certificate, as it includes any individual working in a trade.
8. Daily November 20th, 2003, Registered apprenticeship training programs, 2002.
9. This report focuses on persistence that is once an apprentice starts a program does s/he complete and become certified. It does not cover access to training programs to become tradespersons.
10. Completers are understood as being apprentices with certificates, since RAIS data do not differentiate between both.
11. More follow-up may be done by jurisdictions with recent cohorts. For this cohort, it is however not possible to identify cases with delays in discontinuation reporting.
12. Statistics Canada, CANSIM database, Table 379-0035.
13. Dropouts can be 'Stayouts' (not coming back), in opposition to 'Stopouts', if apprentices come back.
14. Dropouts who would have pursued and completed a trade in another province are not included.
15. Discontinuation is a status of learning at some point in time. There are more discontinuations than dropouts since one person can drop out more than once.
16. This is a measure of learning status, not a count of apprentices. There are more learning statuses than apprentices, since a RA can be counted more than once as a discontinuer and as a completer in the course of 11 years.
17. The expected duration is the duration taken to complete a program if an apprentice satisfies all requirements in terms of hours for all the years in training.
18. Completion indicates that the training requirements have been fulfilled. Certification is obtained after completion. Some apprentices can obtain certification without necessarily completing. They would have canceled their apprenticeship programs and got sufficient experience to challenge and pass certification examination. All completers generally get their certification.
19. 'Stayouts' are dropouts not coming back, in opposition to 'Stopouts'.
20. A median splits the population into two equal groups, half of the population falls above the estimate and half of the population falls below the estimate. Note that median can not be added together to arrive to a total.
21. Insights in the Canadian economy: from Labrador City to Toronto: The industrial diversity of Canadian cities, 1992-2002, Catalogue No. 11-624-MIE – No.003, 2003.
22. Discontinuation is a status of learning at some point in time. There are more discontinuations than dropouts since one person can drop out more than once.
23. This is a measure of learning status, not a count of apprentices. There are more learning statuses than apprentices, since a RA can be counted more than once as a discontinuer and as a completer in the course of 11 years.
24. In this figure, dropouts include those who may come back.
25. Completion indicates that the training requirements have been fulfilled. Certification is obtained after completion. Some apprentices can obtain certification without necessarily completing if they got sufficient experience to pass certification. All completers do generally get their certification.

26. 'Stopouts' are dropouts coming back, in opposition to 'Stayouts'.

27. A median splits the population into two equal groups, half of the population falls above the estimate and half of the population falls below the estimate. Note that medians can not be added together to arrive to a total.

28. This is a measure of learning status, not a count of apprentices. There are more learning statuses than apprentices, since a RA can be counted more than once as a discontinuer and as a completer in the course of 11 years.

29. Census and RAIS data.

30. In fact, Alberta has a Prior Learning Assessment and Recognition system to confirm the level of skill and knowledge of a person for entry into an apprenticeship program. The assessment include review of transcripts, letters of work experienced, request from a current employer recognizing previous work experience, and an industry examination.

31. In this case, completions are counted as many times as they happen. Hence there are more completions than completers since an apprentice could have more than one completion. On the other hand, figures on certification are person-based.

32. 'Stopouts' are dropouts coming back in opposition to 'Stayouts'.

33. Access, persistence and financing: First results from Postsecondary Education Participation Survey (PEPS), 2003, Catalogue No.81-595-MIE2003007.

34. 16% of 18-24 had dropped 18 months after they had started their postsecondary education in 2000.

35. This information is also available in RAIS.

36. Such indicators are derived from survey data, which have uncertainties such as sampling and non sampling error, coverage, non response bias, etc.

37. If a program has a constant annual quota of registered apprentices, the fluctuation in cohorts would be small one year to another and thus a crude rate could be used in a more reliable fashion.

38. The stability and trends of the percentage distribution should also be evaluated for any particular trade and jurisdiction to ensure that a mean or a median is appropriate. For example, the average or the median would not highlight a constantly increasing percentage of completers for a specific duration for various cohorts.

39. This approach removes dropouts at the beginning of each year. Dropouts are considered as an interfering factor that occurs in an uneven fashion along the cohort's life. To get a complete picture of the cohort's events, one could use the same formula presented above and replace the complete population by a dropout population.

Culture, Tourism and the Centre for Education Statistics

Research Papers

Cumulative Index

Statistics Canada's **Division of Culture, Tourism and the Centre for Education Statistics** develops surveys, provides statistics and conducts research and analysis relevant to current issues in its three areas of responsibility.

The **Culture Statistics Program** creates and disseminates timely and comprehensive information on the culture sector in Canada. The program manages a dozen regular census surveys and databanks to produce data that support policy decision and program management requirements. Issues include the economic impact of culture, the consumption of culture goods and services, government, personal and corporate spending on culture, the culture labour market, and international trade of culture goods and services. Analysis is also published in *Focus on Culture* (87-004-XIE, $8, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=87-004-X).

The **Tourism Statistics Program** provides information on domestic and international tourism. The program covers the Canadian Travel Survey and the International Travel Survey. Together, these surveys shed light on the volume and characteristics of trips and travellers to, from and within Canada. Analysis is also published in *Travel-log* (87-003-XIE, $5, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=87-003-X).

The **Centre for Education Statistics** develops and delivers a comprehensive program of pan-Canadian education statistics and analysis in order to support policy decisions and program management, and to ensure that accurate and relevant information concerning education is available to the Canadian public and to other educational stakeholders. The Centre conducts fifteen institutional and over ten household education surveys. Analysis is also published in *Education Matters* (81-004-XIE, free, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=81-004-X), and in the *Analytical Studies Branch research paper series* (11F0019MIE, free, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=11F0019M).

Catalogue no. 81-595-MIE2005035

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Research papers

81-595-MIE2002001	Understanding the rural-urban reading gap
81-595-MIE2003002	Canadian education and training services abroad: the role of contracts funded by international financial institution
81-595-MIE2003003	Finding their way: a profile of young Canadian graduates
81-595-MIE2003004	Learning, earning and leaving – The relationship between working while in high school and dropping out
81-595-MIE2003005	Linking provincial student assessments with national and international assessments
81-595-MIE2003006	Who goes to post-secondary education and when: Pathways chosen by 20 year-olds
81-595-MIE2003007	Access, persistence and financing: First results from the Postsecondary Education Participation Survey (PEPS)
81-595-MIE2003008	The labour market impacts of adult education and training in Canada
81-595-MIE2003009	Issues in the design of Canada's Adult Education and Training Survey
81-595-MIE2003010	Planning and preparation: First results from the Survey of Approaches to Educational Planning (SAEP) 2002
81-595-MIE2003011	A new understanding of postsecondary education in Canada: A discussion paper
81-595-MIE2004012	Variation in literacy skills among Canadian provinces: Findings from the OECD PISA
81-595-MIE2004013	Salaries and salary scales of full-time teaching staff at Canadian universities, 2001-2002: final report
81-595-MIE2004014	In and out of high school: First results from the second cycle of the Youth in Transition Survey, 2002
81-595-MIE2004015	Working and Training: First Results of the 2003 Adult Education and Training Survey
81-595-MIE2004016	Class of 2000: Profile of Postsecondary Graduates and Student Debt
81-595-MIE2004017	Connectivity and ICT integration in Canadian elementary and secondary schools: First results from the Information and Communications Technologies in Schools Survey, 2003-2004

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2004018	Education and labour market pathways of young Canadians between age 20 and 22: an Overview
81-595-MIE2004019	Salaries and salary scales of full-time teaching staff at Canadian universities, 2003-2004
81-595-MIE2004020	Culture Goods Trade Estimates: Methodology and Technical Notes
81-595-MIE2004021	Canadian Framework for Culture Statistics
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